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ABSTRACT

This report is the 11th in a series of biennial reports on the status of women and minorities in science and engineering. The reports are mandated by the Science and Engineering Equal Opportunities Act (Public Law 96-5 16) which was amended in 1998 to include persons with disabilities. The primary purpose of this report is to serve as an information resource on the participation of women, minorities, and persons with disabilities in science and engineering. Like its predecessors, this report found differences between men and women and among racial/ethnic groups in high school completion rates, college enrollment rates, field choice, employment, rank and tenure status, salaries, and work activities. In addition to the trends and issues that have persisted over time, several new concerns have been raised in the last few years which include: (1) the "digital divide"--differences in access to computer technology by sex, race/ethnicity, and disability status; (2) international differences in participation of women in S&E; (3) the decline in male enrollment; (4) changing demographics--growth and diversity in the Asian population; and (5) defining disability-- changes over time and differences among sources. Chapters include: (1) "Precollege Education"; (2) "Undergraduate Enrollment"; (3) "Undergraduate Degrees"; (4) "Graduate Enrollment"; (5) "Graduate Degrees"; and (6) "Employment". (Author/SOE)

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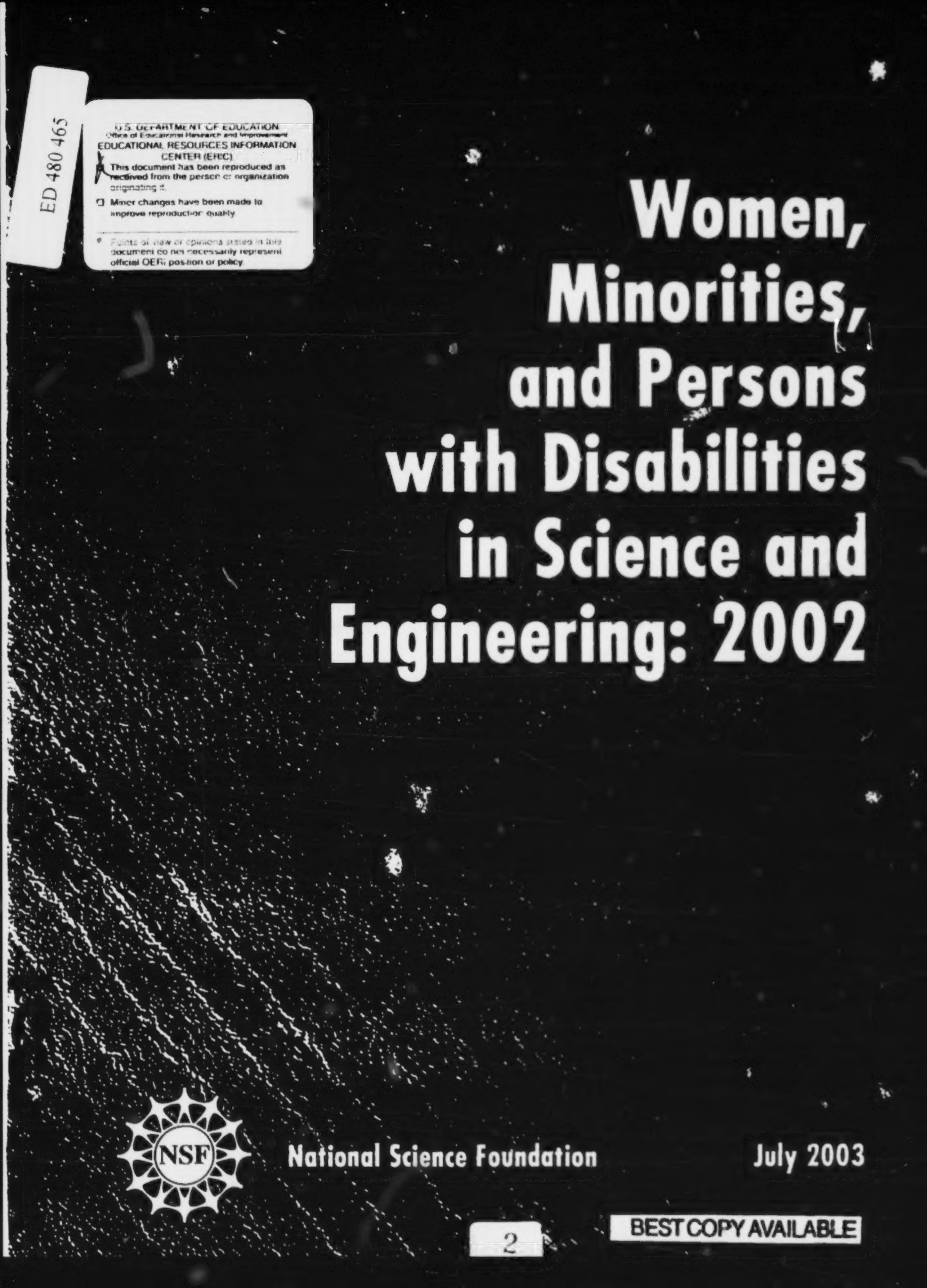

Women, Minorities, and Persons with Disabilities in Science and Engineering: 2002

National Science Foundation

July 2003

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Women, Minorities, and Persons with Disabilities in Science and Engineering: 2002

National Science Foundation

July 2003

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FOREWORD

The National Science Foundation is committed to increasing the participation of underrepresented groups both in the Foundation and in its programs supporting research and education in science and engineering. One of the Foundation's strategic goals, as outlined in the Government Performance and Results Act Strategic Plan FY 1997–2003, is to "strive for a diverse, globally oriented workforce of scientists and engineers." Underpinning this goal is a recognition that "a diverse science and engineering workforce that is representative of the American public and able to respond effectively to a global economy is vitally important to America's future."

This report, the 11th in a biennial series, provides data on the participation of women, minorities, and persons with disabilities in science and engineering education and employment. The data and analyses presented here can be used to track progress, inform the development of policies to increase participation in science and engineering, and evaluate the effectiveness of such policies.

Rita R. Colwell
Director

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ABBREVIATIONS

HBCU	historically black college or university
HEGIS	Higher Education General Information Survey
HSI	Hispanic-serving institution
IPEDS	Integrated Postsecondary Education Data System
NCES	National Center for Education Statistics
NPSAS	National Postsecondary Student Aid Study
NSF	National Science Foundation
R&D	research and development
S&E	science and engineering
SDR	Survey of Doctorate Recipients
SED	Survey of Earned Doctorates
SRS	Division of Science Resources Statistics
SESTAT	Scientists and Engineers Statistical Data System
TCU	tribal college or university

Executive Summary

This report is the 11th in a series of biennial reports on the status of women and minorities in science and engineering. The reports are mandated by the Science and Engineering Equal Opportunities Act (Public Law 96-516), which was amended in 1998 to include persons with disabilities. The primary purpose of this report is as an information source on the participation of women, minorities, and persons with disabilities in science and engineering.

Changes since the last report in this series

The 2000 edition examined changes in participation since the first report in this series was released in 1982. That report found that many of the findings of the 1982 report continued to be the case in 2000. Among these are the relatively small percentages of women and minorities who earn S&E degrees and who are employed in S&E, the concentration of women and minorities in specific fields, the higher rates of part-time employment and unemployment for women than for men, the lower salaries earned by women than by men, the lower salaries earned by minorities than by whites, and the lower percentages of women than of men in full professorships. The first *Women and Minorities in Science and Engineering* report in 1982 did not present data on persons with disabilities.

Like its predecessors, the current report found differences between men and women and among racial/ethnic groups in high school completion rates, college enrollment rates, field choice, employment, rank and tenure status, salaries, and work activities. Although women are more likely than men to complete high school and to enroll in college, they are less likely than men to choose S&E fields—at all levels of education and in employment. Within science and engineering, women are more prevalent in some fields—psychology, the social sciences, and the biological sciences—than others. Women are more likely than men to be employed part time and to be unemployed; women doctoral scientists and engineers employed in educational institutions are less likely than men to be tenured or to have the rank of full professor; and women scientists and engineers receive lower salaries than men.

The high school completion and college enrollment rates of blacks and Hispanics continue to increase, and the numbers and percentages of members of these groups who complete bachelor's, master's and doctoral degrees in S&E are also growing. However, they remain less likely than whites and Asians to graduate from high school, enroll in college, and graduate from college. Bachelor's and master's degree field choice is now similar among whites, blacks, Hispanics, and American Indians. Blacks, Hispanics, and American Indians earn roughly the same percentage of all S&E degrees as they do of non-S&E bachelor's degrees.

There are differences in the educational attainment and S&E labor force participation rates of persons with and without disabilities. Students with disabilities are less likely than those without to graduate from high school, to enroll in college, and to graduate from college. Among scientists and engineers, one-third of those with disabilities were out of the labor force in 1997, compared with 11 percent of those without disabilities. Scientists and engineers with disabilities also had higher unemployment rates than those without. Students with and without disabilities differ little, however, in undergraduate major and S&E occupation, and relatively few differences exist between scientists and engineers with and without disabilities in terms of salaries, percentages in management, percentages that are full professors, and field distribution.

Recent trends have shown some improvements in areas that were identified as specific concerns in the previous report—the declining numbers and percentages of women in computer science and the declining numbers and percentages of minorities in engineering. In computer science, the numbers of women and men earning bachelor's degrees in 1998 rose substantially—by 8 percent for women and 9 percent for men; this was the second consecutive increase for women and the fourth consecutive increase for men. Women continued to account for 27 percent of all computer science bachelor's degree recipients. In engineering, both the numbers of Asian, black, Hispanic, and American Indian undergraduates and their percentages of engineering enrollment increased in the 1990s; concurrently, the number of white engineering students decreased.

Results are mixed regarding the effects of changes in legislation or policy on graduate enrollment. Two of the other specific issues addressed in the previous report—the higher attrition rates of minorities in undergraduate education and the paucity of data on persons with disabilities in S&E education—continue to be cause for concern.

New concerns

In addition to the trends and issues that have persisted over time, several new concerns have been raised in the last few years:

- The "digital divide": differences in access to computer technology by sex, race/ethnicity, and disability status
- International differences in participation of women in S&E
- The decline in male enrollment
- Changing demographics: growth and diversity in the Asian population
- Defining disability: changes over time and differences among sources

The digital divide

Computer and Internet access are becoming increasingly important in American society. According to the Department of Commerce, the share of households with Internet access rose from 26 percent in 1998 to 42 percent in 2000, and the share that have computers rose from 42 percent in 1998 to 51 percent in 2000.[1] Concern has been raised about a digital divide in the United States between computer "haves" and "have-nots" and the extent to which this digital divide can exacerbate existing inequalities. One area in which this concern has been particularly focused is education. Although availability of computers in the classroom has grown over the past decade, teachers in schools with a high percentage of minority students were less likely than those in schools with a low percentage of minority students to have computers and to have access to the Internet. They were more likely to report that they had outdated, incompatible, or unreliable computers. Teachers in schools with a high percentage of minority students were less likely than teachers in schools with a low percentage of minority students to use computers or the Internet for a wide range of activities—for example, for Internet research and creating instructional materials.

Availability and accessibility of computers is also an issue for students with disabilities. Barriers to use of advanced telecommunications by students with disabilities include insufficiently trained special education teachers (cited by 47 percent of public schools surveyed), not enough computers available to students with disabilities (34 percent), not enough computers with alternative input/output devices (38 percent), and inadequate evaluation and support services to meet the special technology needs of students (39 percent).

International differences in participation of women in S&E

Increasing global competition, the worldwide expansion of S&E education, and the recent release of the latest international study of science and mathematics education have resulted in increased attention to international differences in S&E education and employment. Although the United States is among the top countries in the world in terms of numbers and percentages of first university degrees in S&E earned by women, Italy, Spain, and France award far higher percentages of doctoral degrees in the natural sciences to women (68, 44, and 41 percent, respectively) than is the case in the United States (32 percent).

The decline in male enrollment

The decline in the percentage of undergraduates who are male (from 58 percent in 1968 to 44 percent in 1997) at the same time that the proportion of college-aged individuals who are male has increased[2] has been the subject of numerous conferences and articles, and has led to some calls for "affirmative action" for males. Declining percentages of males have occurred in total enrollment, total bachelor's degrees, and S&E bachelor's degrees, and exist across all racial/ethnic groups. Looking more closely, however, it is only the numbers of *white* male students that have actually decreased; the numbers of Asian, black, Hispanic, and American Indian male undergraduates have in fact increased since 1984. Thus, in the case of these racial/ethnic minorities, the decrease in the percentage of undergraduates who are male is attributable to a more rapid increase in the number of females than of males. The greatest disparity between male and female enrollment and degree attainment occurs among minorities and low-income students. In the case of whites, the decrease in the percentage of undergraduates who are male is attributable to a decline in the number of male students concurrent with an increase in the number of female students. Recent (1991 through 1997) declines in white male undergraduate enrollment were concurrent with declines in the white college-age (18- to 24-year-old) population.

Growth and diversity in the Asian population

According to the latest U.S. Bureau of the Census projections for the population of the United States, minorities (Asians, blacks, Hispanics, and American Indians) are expected to be close to half (47 percent) of the resident population by 2050. As of 1999, they collectively constituted

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[1] U.S. Department of Commerce, *Falling Through the Net: Toward Digital Inclusion*, report of a joint study by the Economics and Statistics Administration and the National Telecommunications and Information Administration (2000), http://www.esa.doc.gov/fttn00.htm.

[2] U.S. Bureau of the Census, *Statistical Abstract of the United States: 1999* (Washington, DC, 1999).

28 percent of the population. By 2050, non-Hispanic whites should constitute 53 percent of the U.S. population, down from 72 percent in 1999.

Due to immigration trends, the largest growth is projected in the numbers and percentages of Hispanics and Asians. Asians are expected to increase from 4 percent of the U.S. population in 1999 to 9 percent in 2050, and Hispanics from 12 to 24 percent. Relatively little growth is projected for non-Hispanic blacks and American Indians; these groups would increase from 12 to 13 percent and from 0.7 to 0.8 percent, respectively.

Asians, although a small percentage of the population, are not considered underrepresented in science and engineering. Asians were 4 percent of the U.S. population in 1999 and 11 percent of the people employed in S&E occupations in that same year. Asians, though, are a large and diverse population, comprising many groups that differ in language, culture, and length of residence in the United States. Representation in S&E among these subgroups may in fact vary greatly, but data are generally not available for Asian subgroups.

Defining disability: Changes over time

Increases in the numbers and percentages of students with disabilities over time reflect changes in definitions and in the distribution of types of disabilities, as well as increases in opportunity. The percentage of college freshmen who reported having disabilities increased from less than 3 percent in 1978 to 9 percent in 2000. Much of this increase reflects an increase in students reporting learning disabilities; this category grew from 15 percent of those with disabilities in 1988 to 41 percent in 1998. Freshmen who had learning disabilities were more likely than freshmen with other disabilities to be white and to have significantly higher parental income. The percentage of students with other disabilities decreased from 1988 to 1998—students with visual impairments decreased from 31 percent of freshmen with disabilities to 13 percent; students with orthopedic impairments dropped from 14 to 9 percent.

Elementary and secondary students participating in Federal programs for children with disabilities have been increasing both in number and as a fraction of total public school enrollment. Between 1990 and 1999, the number of students who participated in Federal programs for children with disabilities increased 30 percent, rising from 4.3 million to 5.5 million students. Part of this growth is due to an increase in the number of students identified with specific learning disabilities. This type of disability continued to be the most prevalent one, with 51 percent of all students ages 6 through 21 participating in Federal programs for children with disabilities identified as having specific learning disabilities. Students with specific learning disabilities increased from approximately 2.1 million to 2.8 million students from 1989/90 to 1998/99. The number of students with "other health impairments" also went up dramatically during this period—from approximately 53,000 students (or 1 percent of all students with disabilities ages 6 through 21) in 1989/90 to approximately 221,000 students (or 4 percent of the total) in 1998/99. The increase in the number of children with "other health impairments" is largely due to increases in the identification and provision of services to children with attention deficit disorder and attention deficit hyperactivity disorder, two recently established disability labels that do not constitute a separate category. Concurrent with these numerical increases, progress has been made in serving students in most disability categories in more inclusive settings.

Introduction

Overview

This report, the 11th in a series of biennial publications, documents both short- and long-term trends in the participation of women, minorities, and persons with disabilities in science and engineering education and employment. The reports are mandated by the Science and Engineering Equal Opportunities Act (Public Law 96-516).

The primary purpose of this report is as an information source; it offers no endorsement or recommendations on policies or programs. The previous edition of this report (NSF/SRS 2000) examined changes in participation since the first report in the series was released in 1982. That report found that many of the findings of the 1982 report continued to be the case in 2000. Among these trends are the relatively small percentages of women and minorities who earn S&E degrees and who are employed in S&E, the concentration of women and minorities in specific fields, the higher rates of part-time employment and unemployment for women than for men, the lower salaries earned by women than by men, the lower salaries earned by minorities than by whites, and the lower percentages of women than of men in full professorships. The first *Women and Minorities in Science and Engineering* report in 1982 did not present data on persons with disabilities, thus no changes between 1982 and 2000 in participation of persons with disabilities were reported in the 2000 report. Each report in the series since 1982 has included some data on this population.

The current report focuses on several new concerns—the "digital divide," international differences in participation of women in S&E, the decline in male enrollment, growth and diversity in the Asian population, and changes over time in definitions of disability and differences in definitions among sources. This report also examines the specific concerns addressed in the immediately preceding report to see if they are still relevant and looks at changes that have occurred over the past decade in participation of women, minorities, and persons with disabilities in S&E education and employment.

Organization of this report

This report is organized into six chapters. The first five examine differences between men and women, among racial/ethnic groups, and between persons with and without disabilities in five areas of S&E education: precollege education, undergraduate enrollment, undergraduate degrees, graduate enrollment, and graduate degrees. The sixth chapter examines S&E employment.

Data in this report are presented by sex, by race/ethnicity, and by disability status. Where possible, data are disaggregated further—e.g., by Hispanic subgroup, by sex and race/ethnicity jointly, by disability status and sex, by disability status and race/ethnicity—in order to present a more complete picture of participation in S&E education and employment. Where relevant, data are disaggregated by such variables as socioeconomic status and teacher qualifications to better understand the factors related to participation in science and engineering.

Racial and ethnic categories

In October 1997, the U.S. Office of Management and Budget announced new governmentwide standards for the collection of data on race and ethnicity (published as U.S. OMB 1999). Previously, racial/ethnic groups were identified as white, non-Hispanic; black, non-Hispanic; Hispanic; Asian or Pacific Islander; and American Indian or Alaskan Native. Because the old standards were in effect when the data for this report were collected, the racial/ethnic groups described here are designated by the old standards. In the text, these groups are referred to as white, black, Hispanic, Asian, and American Indian, respectively. Where data collection permits, subgroups of the Hispanic population are identified (e.g., Mexican, Puerto Rican).

In chapters 2 to 5, data by race/ethnicity are generally presented for U.S. citizens and permanent residents only. This is because some of the underlying surveys do not collect race/ethnicity data for people with temporary visas. In chapter 6 (which covers employment), the data by race/ethnicity are for all individuals, including those on temporary visas; no distinctions by citizenship are made. Less than 2 percent of employed scientists and engineers have temporary visas.

Broad demographic characteristics of the U.S. population

Data on the demographic composition of the population is often useful in comparing the relative percentages of groups (men and women, various racial/ethnic groups, and persons with and without disabilities) participating in S&E education and employment. By way of background, text tables 1 and 2 provide data on the numbers and percentages of women, minorities, and persons with disabilities in the U.S. population by age group. In 1999, women were roughly half of the resident population of the United States. Whites were 72 percent, blacks 12 percent, Hispanics 12 percent, Asians 4 percent, and American Indians less than 1 percent of the population. Blacks and Hispanics constituted higher percentages of the younger population (those less than 25 years old) than of the older population. The U.S. Census Bureau (2001) estimates that in 1997, about 20 percent of the population had some form of disability and about 12 percent had a severe disability.

According to the latest Census projections of the U.S. population, minorities (Asians, blacks, Hispanics, and American Indians) are expected to be close to half (47 percent) of the resident population by 2050 (U.S. Bureau of the Census 2000). As of 1999, these groups constituted 28 percent of the population. By 2050, non-Hispanic whites would constitute 53 percent of the U.S. population, down from 72 percent in 1999. Due to immigration trends, the largest growth is projected in the numbers of Hispanics and Asians. Asians are projected to increase from 4 percent of the U.S. population in 1999 to 9 percent in 2050; Hispanics from 12 to 24 percent. Relatively little growth is projected for non-Hispanic blacks and American Indians; these groups would increase their representation in the total U.S. population from 12 to 13 percent and from 0.7 to 0.8 percent, respectively.

Data sources and reliability

The data underlying this report come from a number of non-Federal and Federal sources, primarily surveys conducted by the National Science Foundation's Division of Science Resources Statistics and the National Center for Education Statistics. Some of the data sources used in the report are sample surveys and therefore have differing degrees of reliability. This report states differences in comparisons of groups or in trends in the data over time only if they are statistically significant at the 95 percent confidence level (i.e., the reported difference could be due to chance only 5 or fewer times in 100). Where possible, the impact of nonsampling errors such as incomplete coverage and nonresponse has been taken into account in the report's analyses. For more information on the statistical reliability, limitations, and availability of the data presented in this report, see appendix A.

Because information may have been released since the publication of this report, see the National Science Foundation website at http://www.nsf.gov/sbe/srs/pubdata.htm for the most recent data available.

Availability and Comparability of Data on Persons With Disabilities

The data on persons with disabilities in science and engineering are seriously limited for several reasons, which should be kept in mind in reading this report. Operational definitions of disability vary greatly and include a wide variety of physical and mental conditions. Data about disabilities are frequently not maintained in comprehensive institutional records. Many data sources rely on self-reporting of disabilities. For these reasons, measures of disability, including numbers of persons, impacts, or services received, are likely not to be comparable across different data collections. In this respect, these data differ from other concepts where definitions meet specified and agreed-upon standards—e.g., for variables such as sex, race/ethnicity, citizenship, enrollment, fields of study, earned degrees, labor force participation or occupation—or follow generally accepted conventions—e.g., such as those for full- or part-time enrollment or employment.

Readers should be particularly attentive to technical characteristics of any data on persons with disabilities. It is essential to ascertain how those persons were identified (e.g., self-report, registered to receive services); what conditions or needs were identified as disabilities; and how measures of disabilities, or the severity or impact of the disability, were determined.

It is particularly important to be cautious in comparing incidences of disability reported by different surveys. Differences in definitions, survey respondents, and methodologies may exceed real differences and hence lead to incorrect conclusions.

This report draws from multiple data sources in discussing persons with disabilities and their participation in S&E education and in the workforce. Each chapter includes notes describing in general the sources of data for persons with disabilities. Appendix A includes a detailed discussion of the data sources and the questions used to obtain the information.

Text table 1

Resident population of the United States, by sex, race/ethnicity, and age: 1999

Sex and race/ethnicity	Total	Age														
		Less than 5	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–74	75 and older
	Number (in thousands)															
Total	272,691	18,942	19,947	19,548	19,748	18,026	18,209	19,727	22,545	22,268	19,356	16,446	12,875	10,514	18,218	16,321
Male	133,277	9,683	10,208	10,012	10,151	9,183	9,055	9,771	11,216	11,039	9,501	7,998	6,183	4,968	8,199	6,112
Female	139,414	9,259	9,739	9,537	9,597	8,843	9,154	9,956	11,329	11,229	9,856	8,448	6,693	5,546	10,020	10,211
White	196,049	11,871	12,749	12,913	13,117	11,903	12,159	13,508	16,157	16,482	14,702	12,898	10,226	8,372	14,945	14,046
Asian/Pacific Islander	10,186	836	810	763	765	717	846	888	900	856	731	575	407	323	471	298
Black	33,092	2,603	2,961	2,926	2,891	2,556	2,475	2,522	2,748	2,619	2,140	1,617	1,236	1,014	1,618	1,168
Hispanic	31,337	3,467	3,243	2,739	2,780	2,690	2,570	2,660	2,583	2,165	1,658	1,257	932	747	1,102	744
American Indian/ Alaskan Native	2,026	165	184	207	195	160	160	148	156	147	124	99	75	58	82	67
	Percent															
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	48.9	51.1	51.2	51.2	51.4	50.9	49.7	49.5	49.7	49.6	49.1	48.6	48.0	47.3	45.0	37.4
Female	51.1	48.9	48.8	48.8	48.6	49.1	50.3	50.5	50.3	50.4	50.9	51.4	52.0	52.7	55.0	62.6
White	71.9	62.7	63.9	66.1	66.4	66.0	66.8	68.5	71.7	74.0	76.0	78.4	79.4	79.6	82.0	86.1
Asian/Pacific Islander	3.7	4.4	4.1	3.9	3.9	4.0	4.6	4.5	4.0	3.8	3.8	3.5	3.2	3.1	2.6	1.8
Black	12.1	13.7	14.8	15.0	14.6	14.2	13.6	12.8	12.2	11.8	11.1	9.8	9.6	9.6	8.9	7.2
Hispanic	11.5	18.3	16.3	14.0	14.1	14.9	14.1	13.5	11.5	9.7	8.6	7.6	7.2	7.1	6.0	4.6
American Indian/ Alaskan Native	0.7	0.9	0.9	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4

SOURCE: U.S. Bureau of the Census, *Statistical Abstract of the United States: 2000* (Washington, DC: U.S. Government Printing Office, 2000).

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Text table 2

Population of the United States, by disability status and age: 1997

Disability status	Total	Age					
		Less than 15	15–24	25–44	45–54	55–64	65 and older
	Number (in thousands)						
Total	267,665	59,606	36,897	83,887	33,620	21,591	32,064
Any disability	52,596	4,661	3,961	11,200	7,585	7,708	17,480
Severe	32,970	2,256	1,942	6,793	4,674	5,233	12,073
Not severe	19,626	2,405	2,019	4,407	2,911	2,475	5,407
	Percent						
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Any disability	19.6	7.8	10.7	13.4	22.6	35.7	54.5
Severe	12.3	3.8	5.3	8.1	13.9	24.2	37.7
Not severe	7.3	4.0	5.5	5.3	8.7	11.5	16.9

NOTE: See appendix A for definition of "severe disability."

SOURCE: U.S. Bureau of the Census, *Americans With Disabilities: 1997*, Current Population Reports, P70-73, table 1, http://www.census.gov/prod/2001pubs/p70-73.pdf

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

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Chapter 1

Precollege Education

Overview

Precollege mathematics and science education provides a foundation for subsequent higher education and employment in science and engineering. Although gains have been made by females and underrepresented minorities (i.e., blacks, Hispanics, and American Indians) in mathematics and science coursetaking and achievement—as measured by elementary and secondary assessment test scores and college entrance examination scores—some differences remain when compared to male and white students. Differences in mathematics and science coursetaking and achievement also exist between students with disabilities and those without. These differences by sex, race/ethnicity, and disability status in coursetaking and achievement can become a basis for unequal technological, mathematics, and science literacy as well as unequal participation in further mathematics and science education and subsequent S&E employment.

This chapter examines differences in mathematics and science coursetaking and achievement among women, minorities, and students with disabilities; discusses factors related to elementary and secondary school coursetaking in mathematics and science; and presents high school completion rates.

Differences in coursetaking and achievement

The number and type of precollege courses taken in mathematics and science are important indicators of preparation for undergraduate majors and coursetaking as well as of general scientific literacy. They are also two of the major factors positively related to elementary and secondary mathematics and science achievement (Oakes 1990, U.S. ED/NCES 1995).

Between 1990 and 1998, the percentage of high school graduates who had taken advanced mathematics and science coursework increased. In 1990, 13 percent of all high school graduates reported that they had taken precalculus. By 1998, that proportion had increased to 23 percent. There was a similar increase in advanced science coursework: between 1990 and 1998, the percentage of high school graduates taking chemistry rose from 49 to 60 percent. (See appendix table 1-1.)

Gains in science and mathematics coursetaking have occurred for both male and female students and for students in all racial/ethnic groups. Despite these gains over time, some differences in coursetaking remain, particularly among racial/ethnic groups and between students with and without disabilities. These differences are related to variations in science and mathematics achievement.

Mathematics coursetaking

Females

From 1990 to 1998, both male and female high school students experienced gains in mathematics coursetaking. (See appendix table 1-1.) In 1998, similar percentages of graduates of both sexes had completed various high school math courses. Specifically, 60 percent of male and 64 percent of female high school graduates had taken algebra II. The proportions were also similar for both sexes, albeit much lower, for more advanced high school math courses: 23 percent of graduates of both sexes had taken precalculus, and 11 percent of both had taken calculus. (See appendix table 1-11.)

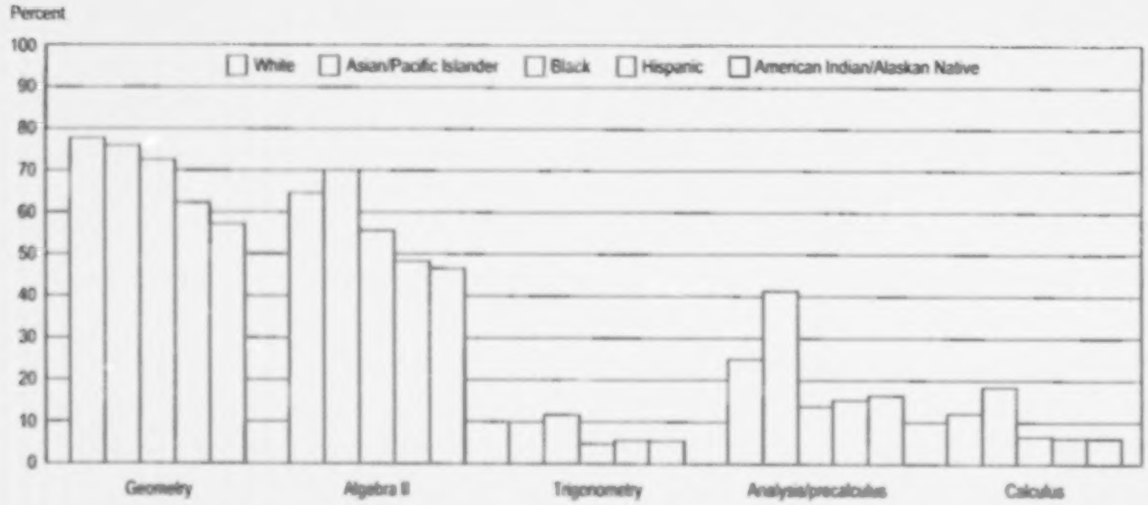
Minorities

The percentages of black and Hispanic students taking higher level mathematics courses increased between 1990 and 1998. In 1990, 41 percent of black high school graduates had taken algebra II; by 1998, 56 percent had taken this course. Similarly, 56 percent of black high school graduates in 1990 had taken geometry, and 3 percent had taken calculus. These percentages had increased by the end of the decade to 73 and 7 percent, respectively. (See appendix table 1-2.)

Differences in mathematics coursetaking were less across racial/ethnic groups in 1998 than in 1990, but still existed. Black, Hispanic, and American Indian high school graduates in 1998 were less likely than their white or Asian counterparts to have taken higher level mathematics courses. (See figure 1-1.) While 65 percent of white and 70 percent of Asian students had taken algebra II, 56 percent of blacks, 48 percent of Hispanics, and 47 percent of American Indians had taken this course. Asians were the most likely of any racial/ethnic group to have taken the most advanced mathematics courses. More than 40 percent of Asian high school graduates had taken precalculus and 18 percent had taken calculus in 1998.

Figure 1-1

Percentage of high school graduates taking selected science and mathematics courses in high school, by race/ethnicity: 1998



SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 2000*, NCES 2001-034 (Washington, DC 2001)

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

By contrast, 25 percent of white, 16 percent of American Indian, 15 percent of Hispanic, and 14 percent of black students had taken precalculus; and 12 percent of white, 7 percent of black, and 6 percent each of Hispanic and American Indian high school graduates had taken calculus. (See appendix table 1-2.)

Students with disabilities

Twelfth grade students with disabilities earned, on average, one-half less credit in mathematics in 1992 than did those without disabilities.[1] (See appendix table 1-3.) Differences were not great by type of disability. The average number of mathematics units completed varied from 2.3 for those with learning disabilities to 2.6 for those with physical problems.

Science coursetaking

Although both male and female high school students experienced gains in science coursetaking between 1990 and 1998, some differences remained. (See appendix table 1-1.) In 1998, female high school graduates were more likely than their male counterparts to have taken biology and chemistry, and males were more likely than females to have taken physics: 91 percent of males and 94 percent of females had taken biology, 57 percent of males and 64 percent of females had taken chemistry, and 32 percent of males and 26 percent of females had taken physics.

Minorities

As in mathematics, blacks, Hispanics, and American Indians are taking more science classes than in the past. The percentages of black, Hispanic, and American Indian graduates taking chemistry and physics generally increased between 1990 and 1998. In 1990, 40 percent of black, 38 percent of Hispanic, and 35 percent of American Indian high school graduates had taken chemistry. By 1998, these percentages had increased to 54, 46, and 47 percent, respectively. In 1990, 15 percent each of blacks and American Indians and 13 percent of Hispanics had taken physics; by 1998, 21 percent of blacks, 19 percent of Hispanics, and 16 percent of American Indians had taken this course before graduation. (See appendix table 1-2.)

Despite these gains, the percentages of black, Hispanic, and American Indian graduates taking chemistry and physics are well below those of whites and Asians. In 1998, 63 percent of white and 72 percent of Asian high school graduates had taken chemistry, and 31 percent of white and 46 percent of Asian students had taken physics.

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[1] The source of these data is the National Center for Education Statistics, National Education Longitudinal Study, 1988. In this study, students were identified as disabled by their parents.

Students with disabilities

Seniors with disabilities had earned about one-half less science credit in 1992 than those without disabilities. (See appendix table 1-3.) Among those with disabilities, students with emotional problems and those with multiple disabilities earned the fewest science credits by the 12th grade.

AP coursetaking

Females

Females accounted for more than half (56 percent) of all AP examination candidates in 2000. They were, however, less likely than males to take AP examinations in certain mathematics and science subjects. In 2000, females made up 46 percent of AP test takers in all math subject areas and 44 percent in all science subject areas. They were more than half (58 percent) of the AP test takers in biology, 47 percent of the test takers in calculus AB, 44 percent of the test takers in chemistry, and 38 percent of the test takers in calculus BC. (See appendix table 1-4.)

Minorities

The proportion of nonwhite students taking AP exams increased from 12 percent in 1978 to 33 percent in 2000 (College Board 2000). In that year, 12 percent of the students taking AP examinations were Asian, 10 percent were Hispanic, 5 percent were black, and 0.5 percent were American Indian (another 6 percent were "other" or not stated). (See appendix table 1-4.) Asians were a higher percentage of mathematics and science AP test takers than they were of all AP test takers—they accounted for 25 percent of calculus BC test takers and 20 percent of AP chemistry test takers in 2000, but only 12 percent of all AP test takers. Conversely, Hispanics were a lower percentage of math and science AP test takers than they were of all AP test takers. Although Hispanics made up 10 percent of the students taking AP exams in all subjects, they were 5 percent of AP chemistry test takers and 3 percent of calculus BC test takers in 2000.

Science and mathematics achievement

Females

Results of the 2000 NAEP mathematics assessment show a statistically significant difference between males and females in average scores in grades 8 and 12 but no statistically significant difference in grade 4. (See appendix table 1-5.) Slight differences favoring males at some grade levels were evident in the percentages performing at the *proficient* and *advanced* levels of achievement.[2] (See appendix table 1-6.)

The 1999 NAEP long-term trend assessment in mathematics shows slight increases in the average scores between 1990 and 1999, and no statistically significant differences between male and female students' average scale scores at ages 9, 13, and 17 in 1999. (See appendix table 1-7.)

Among 4th and 8th graders, female students scored lower than male in the 2000 NAEP science assessment. On the other hand, the differences in males' and females' science scores at grade 12 were not statistically significant. (See appendix table 1-5.)

NAEP long-term trend assessments in science show no statistically significant narrowing of the gap between male and female students' science scores at ages 13 and 17 between 1990 and 1999. In 1999, males scored 6 points higher than females at age 13 and 10 points higher at age 17; no statistically significant difference existed between male and female science scores at age 9. (See appendix table 1-8.)

The International Gender Gap in Eighth Grade Mathematics and Science Achievement

The United States is one of many nations worldwide in which there was no difference between eighth grade boys and girls in mathematics achievement in 1999 (U.S. ED/NCES 2001e). No statistically significant difference was found between the math scores of eighth grade boys and girls in the United States and most other countries that participated in the Third International Mathematics and Science Study - Repeat (TIMSS-R). Only four nations—Czech Republic, Iran, Israel, and Tunisia—showed differences between boys and girls in math achievement.

In science, eighth grade boys outperformed girls in the United States and 15 other nations. The countries with the largest differences between boys and girls in science scores were the Czech Republic, England, and Iran. There were no differences between boys and girls in science achievement in 22 other countries.

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[2] NAEP uses three achievement levels—basic, proficient, and advanced—to measure level of knowledge and skills. The *basic* level denotes partial mastery of the knowledge and skills that are fundamental for proficient work at a given grade. The *proficient* level represents solid academic performance; students reaching this level demonstrate competency with a range of challenging subject matter. The *advanced* level signifies superior performance at a given grade. These performance levels are cumulative—students performing at the advanced or proficient level also perform at the preceding level(s).

Minorities

Results of the 2000 NAEP mathematics assessment show persistent differences in average mathematics scores across racial/ethnic groups in the 4th, 8th, and 12th grades. Math scores for black, Hispanic, and American Indian students remain substantially lower than those for white and Asian students at each grade level.[3] In 12th grade, the average mathematics assessment scores for blacks (274), Hispanics (283), and American Indians (293) were at least 15 points lower than the scores for whites (308) and Asians (319). (See appendix table 1-5.)

Differences by race/ethnicity also existed in the percentages performing at the proficiency levels in mathematics. Among 4th, 8th, and 12th grade students in 2000, at least 20 percent of white students at each grade level scored at or above the proficient level, compared with 14 percent or less of black, Hispanic, and American Indian students. (See appendix table 1-6.) Higher percentages of black, Hispanic, and American Indian students than of whites at all three grade levels scored below the basic proficiency level in mathematics.

The 1999 NAEP long-term trend assessments in mathematics show no change in the gaps between white and Hispanic students at ages 9, 13, and 17 between 1990 and 1999. (See appendix table 1-7.) The gaps in mathematics scores between white and black students at ages 9 and 13 also did not change between 1990 and 1999; among 17-year-olds, however, the gap in math scores between white and black students widened.

Differences in science scores also persist across racial/ethnic groups. In 2000, scores for white students in grade 4 were greater than those for blacks, Hispanics, and American Indians. Scores for white and Asian students were generally higher than those for black and Hispanic students in grades 8 and 12. Among 12th graders, average science scores were 154 for whites, 153 for Asians, 128 for Hispanics, and 123 for blacks. (See appendix table 1-5.)

The 1999 NAEP long-term trend assessments in science show no change in the gaps between white and Hispanic students or those between white and black students at ages 9, 13, and 17 between 1990 and 1999. (See appendix table 1-8.) At age 9, for example, the gap between white and Hispanic students was 31 points in 1990 and 34 points in 1999. The gap between white and black 9-year-olds was 41 points in both 1990 and 1999.

Students with disabilities

Available data on students with disabilities provide limited information on their access to, and success in, mathematics and science. Students with disabilities made up 11 percent of all students in grade 4, 9 percent of those in grade 8, and 5 percent of those in grade 12 in 1996 (U.S. ED/NCES 1997c). These students took fewer science and mathematics courses, had lower grades, and had lower achievement scores than students without disabilities. Students with disabilities had lower average high school grades in mathematics and science than those without disabilities in 1992. (See appendix table 1-3.)

Factors related to coursetaking and achievement

School characteristics (such as courses offered and teacher education and experience), student characteristics (such as family income), and mathematics and science coursetaking are all correlates of academic achievement (U.S. ED/NCES 2000c). In addition, national, state, and school district policies regarding teacher qualifications and curricula vary, resulting in differences in access to high-quality teachers and higher level mathematics and science courses.

School characteristics

The type and amount of school resources devoted to instruction contribute to the quality of science and mathematics education. School characteristics that correlate with student achievement include availability and quality of science and mathematics courses, availability and use of technology, and access to qualified teachers (U.S. ED/NCES 1995 and 1998c, Oakes 1990, and Weiss 1994).

Availability of AP and advanced math and science courses

Students who take advanced mathematics and science courses, including advanced placement (AP) courses,[4] in high school are more likely than those who do not to major in science and engineering in college (U.S. ED/NCES 2000b). However, such advanced courses are not available in all high schools. In 2000, only about 60 percent of the nearly 22,000 high schools (both public and private) in the United States offered AP courses (College Board 2000).

Availability—or rather, the unavailability—of AP courses may be an issue for certain racial/ethnic groups. Although the availability of AP courses has increased over time nationwide, not all schools in a given state participate in the program. States where less than half of the schools participate in the program are mainly in the mountain and west north central regions of the United States. These states—Alaska, Idaho, Iowa, Kansas, Missouri, Montana, Nebraska, North

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[3] No data are available for Asian students in grade 4.

[4] The AP program, sponsored by the College Board, consists of nationally standardized curricula in 32 subjects. Students can earn college credits by passing exams in these subjects.

Dakota, South Dakota, and Wyoming—have low concentrations of underrepresented minority students.[5] Additionally, there are a number of states in the South where less than half of the schools participate in the AP program. These states—Alabama, Arkansas, Louisiana, and Mississippi—have high concentrations of underrepresented minority students (College Board 2000).

Availability and use of technology

The availability of computers in the classroom increased over the past decade. Nearly all public school teachers reported in 1999 that at least one computer was available somewhere in their school, and more than 80 percent reported that they had computers available in their classrooms (U.S. ED/NCES 2000d). Computer usage is related to mathematics achievement. Seventeen-year-old students who said they had access to computers in the classroom scored higher on the 1999 National Assessment of Educational Progress (NAEP) long-term mathematics assessment[6] than did their peers who said they did not have access. Furthermore, students who had used a computer to solve mathematics problems scored higher than those who said they had never done this (U.S. ED/NCES 2000b).

Access to technology is more of a given for white students than for minority students.[7] Teachers in schools with 50 percent or more minority students were generally less likely than those in schools with minority enrollment of 20 percent or less to have access to the Internet in the classroom, and to use computers or the Internet for a wide range of teacher and student activities—for example, for student Internet research and in gathering information for lesson plans. Teachers in schools with 50 percent or more minority enrollment also were more likely to report that they had outdated, incompatible, or unreliable computers than those in schools with less than 6 percent minority enrollment. (See appendix table 1-9.)

Technology in the classroom can influence the instruction of students with disabilities. The very presence of a personal computer or Internet access, or such telecommunications advances as closed captioning in video media, can enable students with disabilities to communicate and participate in classroom activities on a more equal basis with students who do not have disabilities. Moreover, efforts to increase accessibility for persons with disabilities often increase accessibility for others as well. For example, closed captioning—originally implemented for people who are deaf—is now being used by people learning English as a second language (NRC 1997).

Not all of these advances, however, are accessible by all people in all situations. The National Center for Education Statistics (1997a) cites numerous barriers to more widespread use of advanced telecommunications by students with disabilities, including:

- Insufficiently trained special education teachers (cited by 47 percent of public schools surveyed)
- Inadequate evaluation and support services to meet the special technology needs of students (37 percent)
- Insufficient number of computers with alternative input/output devices (38 percent)
- Insufficient number of computers available to students with disabilities (34 percent)

Teacher qualifications

Teacher quality, as measured by their preparation and qualifications, is one of the strongest correlates of student achievement, including mathematics achievement (Darling-Hammond 1999, Sanders and Rivers 1996). Access to highly qualified teachers in science and math varies by race/ethnicity. Higher student test scores are associated with teachers with bachelor's or master's degrees in the subjects they teach (Goldhaber and Brewer 1997) and with teachers who majored or minored in the relevant subject (Wenglinsky 2000); this is particularly true in science and mathematics.

Many states, however, are having difficulty in finding and recruiting adequately prepared teachers; consequently, they are hiring and granting provisional certification to teachers without adequate preparation in the subjects they are assigned to teach. Many who teach mathematics and science are not adequately prepared in those subjects, and a large proportion of those who are not adequately prepared can be found in schools with large numbers of minority students (CAWMSET 2000).

Minority students are less likely to have teachers with master's degrees, less likely to have teachers in math or science courses who are trained or certified in math or science respectively, and less likely to have experienced teachers than are white students. Teachers at schools with 50 percent or more minority enrollment in 1998 were less likely to have a master's degree than teachers at schools with low (5 percent or less) minority enrollment (U.S. ED/NCES 1999b). Further, mathematics teachers in public secondary schools with 50 percent or more minority enrollment were less likely than those in schools with less than 10 percent minority enrollment to have majored in mathematics and less likely to be certified in mathematics (U.S. ED/NCES 1998a). Schools in the top quartile for high concentrations of minority students were more likely than those with lower concentrations to have teachers with 3 or fewer years of experience: 21 percent of teachers in schools with high minority enrollment had 3 or fewer years of experience versus 10 percent of those in schools with low minority enrollment (U.S. ED/NCES 2001b).

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[5] These states do, however, have relatively large numbers of American Indian students.

[6] The main NAEP assessment measures students' performance in a number of subjects, including mathematics and science, in the 4th, 8th, and 12th grades. It uses up-to-date subject frameworks and the latest in assessment methodology. A second NAEP assessment involves long-term trend assessment; this measures students' performance in mathematics, science, and reading at ages 9, 13, and 17 using the same procedures and questions that were instituted in the early 1970s. The data in this chapter generally refer to the main assessment.

[7] Minority students include black, Hispanic, American Indian, and Asian students.

Characteristics of Math and Science Teachers

Elementary mathematics and science teachers are overwhelmingly female. In grades 1 to 4 in 2000, 90 percent or more of math and science teachers were female. (See appendix tables 1-10 and 1-11.) In grades 9 to 12, there is a more even distribution of male and female teachers: in 2000, half of the science teachers and 55 percent of the mathematics teachers in these grades were female.

Elementary and secondary mathematics and science teachers are also overwhelmingly white. For example, in grades 9 to 12, 4 percent of both math and science teachers were black. About 2 percent of secondary mathematics teachers and 3 percent of secondary science teachers were Hispanic. American Indians and Asians accounted for about 1 percent each of mathematics teachers in these grades, and for about 2 percent each of the science teachers.

Although state and district policies in the United States differ greatly on standards for teacher education and certification,[8] teachers in schools with high minority enrollment are as likely to be certified as those in schools with low minority enrollment. Teachers at schools with 50 percent or more minority enrollment in 1998 were as likely to have regular or standard state certificates or advanced professional certificates as teachers at schools with low minority enrollment (U.S. ED/NCES 1999b).

Relatively few full-time public school teachers feel very well prepared to address the needs of minority students or students with disabilities. In 1998, 20 percent of teachers of such students reported that they felt "very well prepared" to address the needs of students with limited English proficiency or from diverse cultural backgrounds; 21 percent felt very well prepared to address the needs of students with disabilities.[9] Among those whose primary teaching assignment was math or science, relatively few felt very well prepared to address special student needs: of those teaching such students, 13 percent reported feeling very well prepared to address the needs of students with limited English proficiency or from student populations with diverse cultural backgrounds, and 19 percent felt very well prepared to address the needs of students with disabilities (U.S. ED/NCES 1999b).[10]

Student characteristics

Family income and parents' education

Socioeconomic status (parental occupation, education, and income) is highly correlated with mathematics achievement (Ekstrom, Goertz, and Rock 1988; U.S. ED/NCES 1997b). In 1996, students in grades 4, 8, and 12 whose parents had less than a high school education scored lower

Racial/Ethnic Distribution of Students With Disabilities

Although blacks were 15 percent of the resident population aged 6 through 21, they were 20 percent of the students in this age range served under IDEA in the 1998/99 school year. (See appendix table 1-12.) Black students accounted for 34 percent each of students ages 6 through 21 identified as having developmental delays and mental retardation. Asians were 4 percent of the general population of students aged 6 through 21, and 2 percent of students identified as having disabilities. American Indians were 1 percent of the general population aged 6 through 21 and 1 percent of students with disabilities. The percentage of Hispanic students with disabilities (13 percent) was similar to their percentage in the resident population of students ages 6 through 21 (14 percent). White students were 66 percent of the resident population ages 6 through 21 and 64 percent of the students with disabilities. Their representation among students with disabilities is greater than their representation in the resident population in five disability categories—speech or language impairments (68 percent), orthopedic impairments (67 percent), other health impairments (76 percent), visual impairments (70 percent), and traumatic brain injury (70 percent.)

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[8] In some states, teachers are required to complete a bachelor's degree with a major in the subject area, take coursework in education, and complete 18 weeks of student teaching. In other states, teachers do not need even a minor in the subject area, take less coursework in education, and complete only 6 weeks of student teaching (Darling-Hammond 1999).

[9] Thirty-three and 41 percent, respectively, felt moderately well prepared to address the needs of such students.

[10] Twenty-eight and 40 percent, respectively, felt moderately well prepared.

on the NAEP science and mathematics assessments than did students whose parents had higher levels of education. Similarly, those students eligible for the free or reduced price lunch program (an indicator of parental income) scored lower than those not eligible (U.S. ED/NCES 1996b).

Black and Hispanic students are more likely than white or Asian students to come from low-income families. In 1998, more than half (52 percent) of Hispanic students and almost half (48 percent) of black students aged 3 to 17 had annual family incomes of less than $25,000.[11] In contrast, just 17 percent of white students and 22 percent of Asian students had annual family incomes of less than $25,000 (U.S. Bureau of the Census 1999).[12]

Differences in parental education and family income are not the only factors that relate to the racial/ethnic differences in test scores, however (Jencks and Phillips 1998). For example, the 1996 grade 8 mathematics and science scores of black and Hispanic students lagged those of whites and Asians even among students whose parents graduated from college. (See appendix table 1-13.)

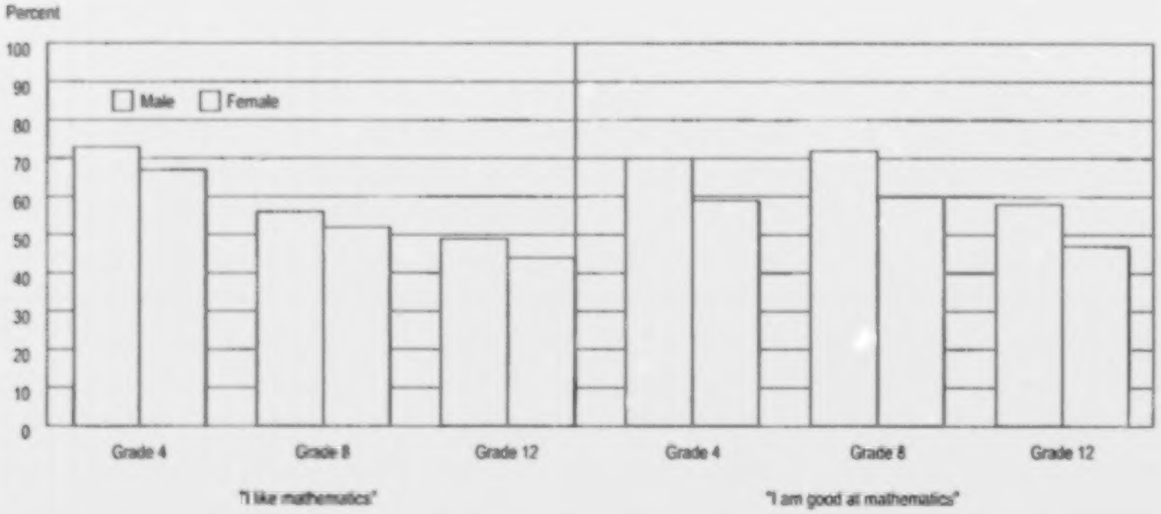
Attitudes toward science and mathematics

Differing attitudes toward science and mathematics and different perceptions about their performance in these subjects are evinced by members of both sexes and members of different racial/ethnic groups. One factor in the differences between male and female students in science and mathematics achievement may be these differences in attitude. Females generally have less positive attitudes toward science and math than do males. (See figure 1-2.) In 2000, female 4th and 12th graders were less likely than their male counterparts to agree with the statement "I like mathematics" (an indicator of their attitudes about mathematics). In grades 4, 8, and 12, females were less likely than males to agree with the statement "I like science." And among students in all three grades, females were less positive than males regarding their mathematics and science performance: specifically, they were less likely than males to agree with the statements "I am good at mathematics" and "I am good at science." (See appendix tables 1-14 and 1-15.)

Black and Asian students generally say they like mathematics more than do white students. In 2000, black 4th and 8th graders and Asian 8th and 12th graders were more likely than their white counterparts to agree with the statement "I like mathematics." In 8th and 12th grades, Asian students were more likely than students in most other minority groups to agree with the statement "I am good at mathematics."

Figure 1-2

Percentage of 4th, 8th, and 12th graders agreeing with the statements "I like mathematics" and "I am good at mathematics," by sex: 2000



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 2000 Mathematics Assessment, http://nces.ed.gov/nationsreportcard/naepdata/

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[11] Data are for the 50 states and District of Columbia only.

[12] Comparable data for American Indians are not available from the Census's Current Population Survey because of small sample size.

In 2000, the various racial/ethnic groups were similar in liking science in grade 4. Among 8th and 12th graders, black and white students—and among 12th graders, Asian students—were more likely than Hispanic students to like science. At all three grade levels, Hispanics were less likely than whites and blacks to think that they were good at science.

National, state, and district policies

Finance

In the United States, the bulk of public education is funded through local taxes and bonds. Funding thus varies widely from one school district to another depending on the wealth of the community. Although there is much debate about the relationship between school funding and student achievement, most recent research indicates that, although total expenditures per pupil may have little effect on achievement, the additional school resources devoted to student instruction that are made possible by better funding may in fact have sizable effects on achievement (Jencks and Phillips 1998).

Curricular requirements

States vary widely in the specific mathematics and science courses they require for graduation.[13] Roughly half of all states do not have any requirements at all for specific math or science courses. Most have requirements for a specified number of courses. In 2000, 24 states required between 2.5 and 4.0 credits of mathematics, and 19 states required between 2.5 and 4.0 credits of science (CCSSO 2000). Differences in curricular requirements, though, are not likely to account for racial/ethnic differences in achievement. In the 1993/94 school year, public school districts with high (50 percent or more) minority enrollment were more likely than districts with low (less than 5 percent) minority enrollment to have graduation requirements that met or exceeded the National Commission on Excellence in Education's recommendations of 3 years of mathematics and 3 years of science (U.S. ED/NCES 1998a).

Classroom placement

The Individuals With Disabilities Education Act (Public Law 105-17) mandates that students with disabilities be educated with those who do not have disabilities to the maximum appropriate extent. Students with disabilities may be served in regular classrooms and be provided with special services via a resource room or may receive instruction at a variety of special sites. The reasoning behind this mandate is that special education students who spend more time in regular education and vocational classes have greater access to the general education curriculum, higher expectations for performance, and more positive school outcomes (U.S. Department of Education 1996, 1997).

From 1990 to 1998, the proportion of students with disabilities who were served in regular classrooms for most of the school day increased. (See figure 1-3.) In the 1997/98 school year, 46 percent of all students receiving special education services were served outside the regular classroom less than 21 percent of the day (up from 32 percent in 1989/90). Another 29 percent were served outside the regular classroom for 21 to 60 percent of the day, (down from 38 percent). The percentage served outside the regular classroom for more than 60 percent of the day decreased from 25 percent in 1989/90 to 20 percent in 1997/98. (See appendix table 1-16.)

Placement patterns vary by the 12 disability categories defined by the Individuals With Disabilities Education Act. Students with speech or language impairments are most likely to attend regular classes in a regular school facility: 88 percent were in a regular school and outside the regular classroom less than 21 percent of the day in the 1998/99 school year. Students with mental retardation, autism, multiple disabilities, hearing impairment, serious emotional disturbance, traumatic brain injury, or deaf-blindness spend more time outside the regular classroom in a regular school and are more likely to be served in separate or residential facilities. (See appendix table 1-17.)

Ability grouping

Most elementary schools in the United States use ability grouping for reading classes, and most high schools group students by curricular tracks—academic (college preparatory, honors, AP), general, and vocational. Black and Hispanic students are more likely to be in general and vocational tracks (Oakes 1990, Ferguson 1998). Grouping students by ability level is more prevalent in mathematics than in science and more prevalent in grades 9 to 12 than in the lower grades. In both science and mathematics, classes with a high proportion of minority students are more likely to be labeled "low-ability" classes than are those with a low proportion of minority students (Weiss 1994).

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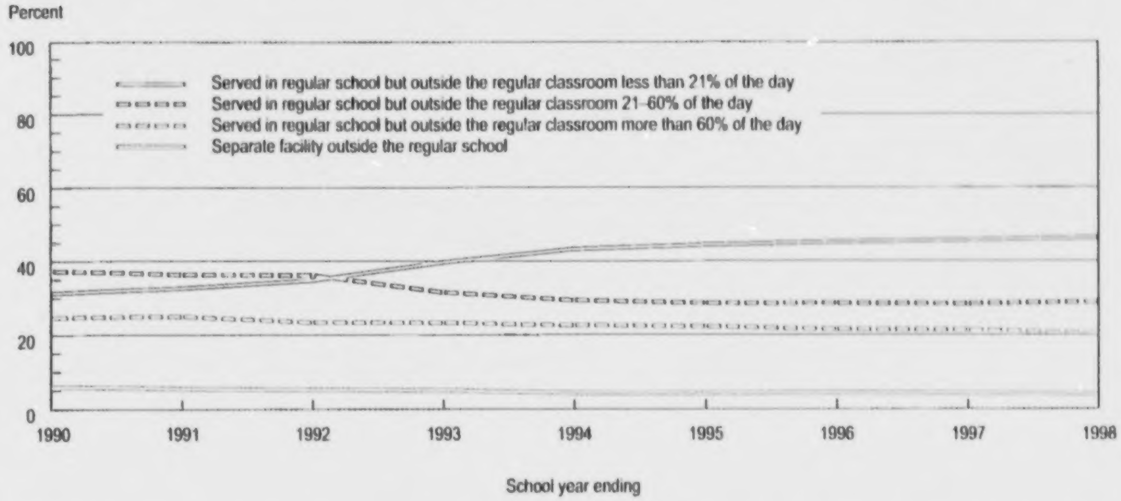
[13] See National Center for Public Policy and Higher Education (2000) for data by state on academic preparation for higher education (high school completion, eighth grade achievement in mathematics, reading, and writing, SAT scores; and percentage passing AP examinations).

Figure 1-3

Percentage of students ages 6 to 21 with disabilities, by type of educational environment: 1990–98



SOURCE: U.S. Department of Education, Office of Special Education and Rehabilitative Services, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000).

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Estimates of the Number of Students With Disabilities

Determining the number of students with disabilities is challenging, given variations in age ranges of the population, in definitions, in data collection procedures, and in the person reporting the disability (e.g., student, parent, teacher, school official) (U.S. ED/NCES 1997d). For differences in prevalence and classification among various sources, see NSF 1999, text table 2-1.

According to the Department of Education's Office of Special Education and Rehabilitative Services, 11 percent of children between the ages of 6 and 17 were served in federally supported special education programs in 1998/99 (U.S. Department of Education 2000b). Students participating in Federal programs for children with disabilities have been increasing both in number and as a proportion of total public school enrollment. Between 1990 and 1999, the number of students who participated in Federal programs for children with disabilities increased 30 percent, rising from 4.3 million to 5.5 million. (See appendix table 1-18.)

Part of this growth is due to an increase in the number of students identified with specific learning disabilities; this category is the most prevalent, accounting in 1998/99 for 51 percent of all students ages 6 through 21 participating in Federal programs for children with disabilities. The number of students in this category increased from approximately 2.1 million to 2.8 million from 1989/90 to 1998/99. The number of students with "other health impairments" also rose dramatically during this period—from approximately 53,000 students (or 1 percent of all students with disabilities ages 6 through 21) in 1989/90 to approximately 221,000 students (or 4 percent of the total) in 1998/99. This increase is largely attributable to increases in the identification and provision of services to children with attention deficit disorder and attention deficit hyperactivity disorder.

Standards-based reform

In recent years, many states have adopted standards-based reforms in elementary and secondary education. These reforms focus on setting high standards for student performance and judging students, teachers, or schools on the basis of their achievement of the standards. The 1994 reauthorization of Title I of the Elementary and Secondary Education Act (which provides funds to schools for educating disadvantaged students) requires states to develop standards for student performance and assessments that measure performance against these standards (Elmore and Rothman 1999). It also requires that these standards and assessments apply to all students. Few states, however, specifically include students with disabilities in their standards. Among the 47 states with standards, 34 did not specify whether the standards apply to students with disabilities, 4 specified that the standards apply to all students and that "all" specifically includes students with disabilities, and another 9 specified that students with disabilities are included and that accommodations should be made to allow students the opportunity to achieve the standards (Thurlow et al. 1998).

As part of standards-based reform, many states have developed their own assessments. These may be used in decisions involving tracking, promotion, and graduation. When these assessments adequately measure student performance against valid and relevant educational standards, they can promote learning; in the absence of access to a high-quality curriculum and instruction, however, they can actually promote group differences in educational outcomes (Heubert and Hauser 1998).

Students with disabilities are often excluded from assessments. At least half of all students with disabilities were excluded from the National Assessment of Educational Progress before 1995. State and local policies often excluded them from testing, school staff may have believed they were unable to participate fully, and/or no accommodations were made available that met the needs of their legally required Individualized Education Programs.[14] The 1996 NAEP science and mathematics assessments explored the effects of various mechanisms to increase the participation of students with disabilities in the national assessments. Rules for exclusion/inclusion were clarified, overall rules were changed to increase inclusiveness and the likelihood of consistent application, and accommodations were provided, including:

> ...provision of large-print booklets and large-face calculators, provision of Braille booklets and talking calculators, and accommodations in administration procedures (e.g., unlimited testing time, individual or small-group administrations, allowing a facilitator to read directions, allowing students to give answers orally, allowing students to give answers using a special mechanical apparatus) (U.S. ED/NCES 1996a, p. 5).

Changes in the inclusion criteria without provision of accommodations did not increase inclusion rates in the NAEP assessments; however, provision of accommodations did increase inclusion rates in grades 4 and 8 (U.S. ED/NCES 2000a). In the samples of students for whom accommodations were not made, the proportion of students assessed was 47 percent in grade 4 and 58 percent in grade 8. With accommodations, these proportions increased to 72 and 71 percent, respectively.

High school completion

A high school education is traditionally a prerequisite to access to higher education. Racial/ethnic and disability status differences in high school completion rates thus are likely to contribute to differences in college enrollment.

Females

Females are more likely than males to graduate from high school. Among 25- to 29-year-olds in 1999, 90 percent of females and 86 percent of males had graduated from high school. (See appendix table 1-19.)

Minorities

Although white students are more likely than black and Hispanic students to graduate from high school, gains in high school completion by blacks have narrowed the education gap. (See figure 1-4.) In 1990, 90 percent of whites and 82 percent of blacks in the 25–29 age group had completed high school. By 1999, 93 percent of whites and 89 percent of blacks in that age range had completed high school. (See appendix table 1-19.)

Hispanics have the lowest high school completion rates and have experienced lower gains than blacks over time. In 1999, 62 percent of those in the 25–29 age group were high school graduates, an increase from 58 percent in 1990. The low high school completion rates can be partly attributed to the large number of foreign-born Hispanics who entered the United States without a high school education. The lower high school completion rates for blacks and Hispanics may also be related to family income. Youths between the ages of 18 to 24 who lived in families with low income levels were eight times more likely to drop out than those from families with high incomes (U.S. ED/NCES 1997c). The lower high school completion rate for Hispanics may also reflect language barriers.

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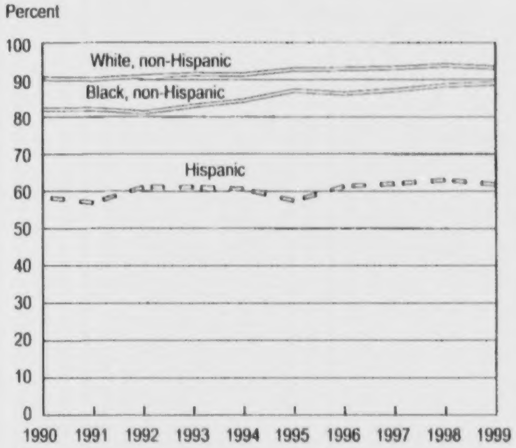
[14] In accordance with the Individuals With Disabilities Education Act, every child with a disability must have a written Individualized Education Program prepared for him or her that is specifically tailored "to help the student be involved in, and progress in, the general curriculum" (U.S. Department of Education 2000a)

Figure 1-4

Percentage of 25- to 29-year-olds who had completed high school, by race/ethnicity: 1990–99



SOURCE: U.S. Bureau of the Census, March Current Population Survey, various years.

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Students with disabilities

Dropout rates vary by type of disability. Those with visual, hearing, speech, or mobility impairments were least likely to have dropped out in the 1997/98 school year among those exiting special education. (See appendix table 1-20.) Those with learning disabilities, mental retardation, and serious emotional problems were most likely to have dropped out.

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Chapter 2

Undergraduate Enrollment

Overview

Differences in completion of bachelor's degrees in science and engineering by sex, race/ethnicity, and disability status are related to differences in high school completion rates, college enrollment rates, college persistence and attainment rates, and choice of undergraduate major. In general, blacks and Hispanics are less likely than whites and Asians to graduate from high school, to enroll in college, and to graduate from college. Among those who do enroll in or graduate from college, however, blacks, Hispanics, and American Indians are about as likely as whites to choose S&E fields; Asians are more likely than members of other racial/ethnic groups to choose these fields. Similarly, students with disabilities are less likely than those without to graduate from high school, to enroll in college, and to graduate from college; however, they are about as likely as those without disabilities to major in S&E. On the other hand, women are more likely than men to graduate from high school and to enroll in college. Although they are just as likely as men to graduate from college, they are less likely to major in science and engineering in general and in certain S&E fields in particular.

Enrollment rates

College enrollment rates differ between men and women and among the various racial/ethnic groups. Women are more likely than men, and whites and Asians are more likely than members of other racial/ethnic groups, to enroll in college. The reasons for these different rates of enrollment are varied, with the literature citing such factors as differences in academic preparation and in family characteristics, including family structure, parental education, and family income (U.S. ED/NCES 1998).

Women

Women are more likely than men to attend college. Among the 25- to 29-year-old population in 2000 that had completed high school, women were more likely than men to have attended college—69 percent of women and 64 percent of men had completed some college. (See appendix table 2-1.) Women are also more likely than men to enroll in college immediately following high school. Among 1999 high school completers aged 16 to 24, 64 percent of women compared to 61 percent of men were enrolled in college the October after high school graduation (U.S. ED/NCES 2000a).

In 1997, women accounted for more than half (56 percent) of total undergraduate enrollment at all institutions.[1] (See appendix table 2-2.) Women have constituted more than half of all undergraduates since 1978. The number of female undergraduates remained relatively constant throughout the 1990s, fluctuating between 6.9 and 7.0 million from 1991 through 1997. The number of male undergraduates also remained relatively constant, fluctuating between 5.5 and 5.6 million over the same period. Total undergraduate enrollment is projected to rise through 2009, especially among women, full-time students, students under 22 years old, and students at 4-year institutions (U.S. ED/NCES 2000a).

Minorities

Blacks and Hispanics are less likely than whites to attend college. Among high school graduates aged 25 to 29 in 2000, 68 percent of whites, 61 percent of blacks, and 52 percent of Hispanics had completed some college. (See appendix table 2-1 and figure 2-1.) Within each of the racial/ethnic groups for which data are available (white, black, and Hispanic), women are more likely than men to attend college.

Blacks and Hispanics are less likely than whites to enroll in college immediately following high school. In 1997,[2] the percentages of black and Hispanic high school graduates who had enrolled in college the October after completing high school were 59 and 55 percent, respectively, compared with 68 percent of white high school graduates (U.S. ED/NCES 2000a). Immediate enrollment rates for white and black high school graduates increased over the decade, but there was no growth in immediate enrollment rates for Hispanic high school graduates during this period.

Among U.S. citizens and permanent residents,[3] nonwhite enrollment in undergraduate programs increased over the last two decades, both in absolute numbers and as percentages of total undergraduate enrollment. The number of black students rose from approximately 1.1 million in 1990 (10 percent of total undergraduate enrollment) to approximately 1.4 million in 1997 (11 percent of total undergraduate enrollment). (See appendix table 2-2.) Similarly, the number of Hispanic undergraduates grew from about 0.9 million (7 percent) in 1990 to about 1.3 million (10 percent) in 1997, the number of Asian undergraduates grew from approximately 507,000 (4 percent) to approximately 745,000 (6 percent), and the number of American Indian students increased from around 95,000 (0.8 percent) to around 127,000 (1 percent). In contrast, the number of white undergraduates dropped from approximately 9.3 million (78 percent) in 1990 to 8.7 million (71 percent) in 1997.

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[1] The survey universe for the data presented here is all accredited institutions of higher education. These are primarily 2- and 4-year institutions, but include a small number of less-than-2-year institutions that enroll less than 1 percent of undergraduate students.

[2] Because of small sample sizes for blacks and Hispanics, 3-year averages were calculated here. For example, the 3-year average for blacks in 1997 is the average percentage of black high school completers aged 16 to 24 who were enrolled in college the October after completing high school in 1996, 1997, and 1998.

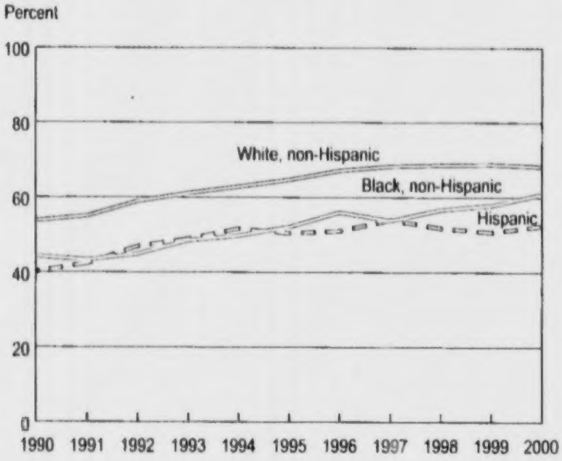
[3] Data on race/ethnicity of undergraduate students are collected only for U.S. citizens and permanent residents. Comparable data are not collected for students on temporary visas.

Among Asian, black, Hispanic, and American Indian undergraduates, the numbers of both male and female students increased between 1990 and 1997. The numbers of white male and white female undergraduates dropped after peaking in 1991. Declining enrollments for whites may be attributed to declines in the college-age population as a whole. The white college-age population (18- to 24-year-olds) declined steadily from 1990 through 1997. (See figure 2-2.) Between 1990 and 2000, the number of nonwhite 18- to 24-year-olds in the United States increased, mostly within Asian/Pacific Islander and Hispanic subgroups. The black college-age population remained fairly constant in size over the period. The numbers of 18- to 24-year-olds in each racial/ethnic group are expected to increase through 2010.

The percentages of undergraduates in each racial/ethnic group that are women increased between 1990 and 1997; since 1992, more than half of the undergraduate students in each racial/ethnic group have been women. (See appendix table 2-2.)

Figure 2-1

Percentage of 25- to 29-year-old high school completers with some college, by race/ethnicity: 1990–2000



SOURCE: U.S. Bureau of the Census, March Current Population Survey, various years.

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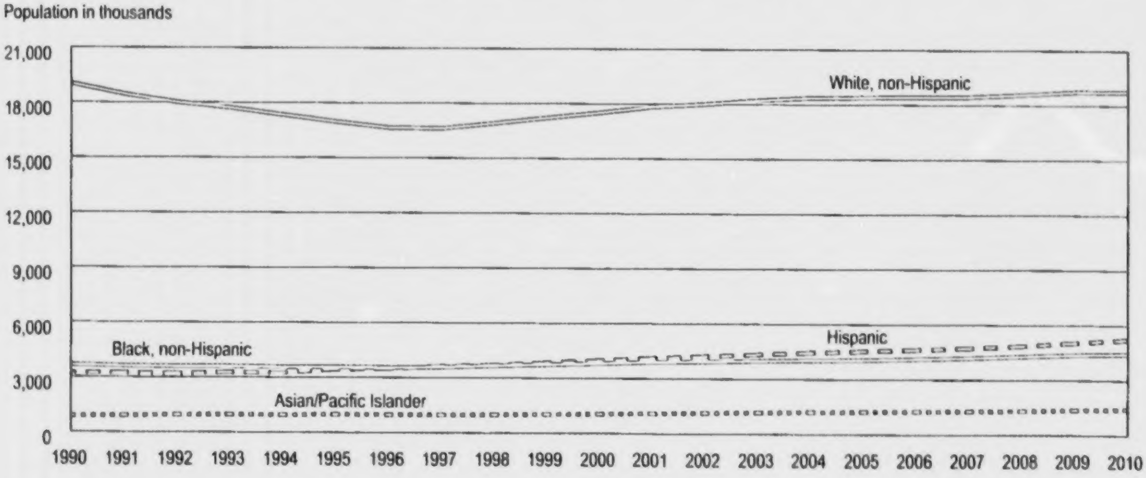
Figure 2-2

U.S. population ages 18 to 24, by race/ethnicity: July 1990–99 and projections to 2010



SOURCE: U.S. Bureau of the Census, July Current Population Survey.

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Students with disabilities

Among 1988 eighth graders who completed high school, students with disabilities were less likely than those without disabilities—63 versus 72 percent—to have enrolled in postsecondary education by 1994.[4] (See appendix table 2-3.) Those who did were less likely than students without disabilities to enroll in 4-year institutions. Findings from the National Education Longitudinal Study indicate that students with disabilities may be less academically prepared for college than those without: they were more likely to have taken remedial courses, were less likely to have taken advanced placement courses, and had lower grade point averages and SAT scores (U.S. ED/NCES 1999b). Academic preparation varied by type of disability. Students with learning disabilities were least academically prepared; those with orthopedic impairments were most academically prepared.

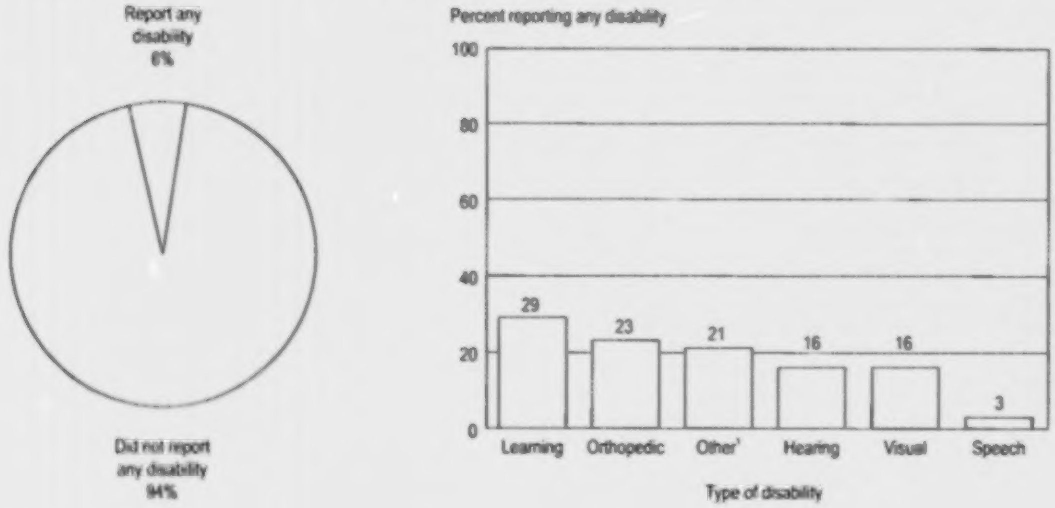
Among 1998 college freshmen, students with disabilities were more likely than those without to have earned Cs and Ds in high school; they were less likely to have met the recommended years of high school study in mathematics, the biological sciences, and the physical sciences; and they spent more time between high school graduation and entry into college than did those without disabilities (Henderson 1999; see appendix A for question wording).

Students with disabilities comprised roughly 6 percent of those enrolled in undergraduate institutions in 1996. (See figure 2-3.) Students with learning disabilities comprised the largest group of students with disabilities. Two groups of students with disabilities who completed high school nearly matched or exceeded the proportion of students without disabilities who had enrolled in postsecondary education by 1994: those with orthopedic and those with visual impairments. (See appendix table 2-3; see appendix A for question wording.)

The percentage of college freshmen reporting disabilities increased from less than 3 percent in 1978 to 9 percent in 2000. Much of the growth in the number and percentage of students with disabilities is due to increased numbers of students with learning disabilities; this group accounted for

Figure 2-3

Percentage of academic year 1995/96 undergraduates who reported any disability and the percentage reporting each disability type: 1996



[1] Any other health-related disability or impairment.

NOTE: Percentages do not total 100 because some students reported multiple disabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation and Outcomes*, NCES 1999-187 (Washington, DC, 1999).

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[4] The National Education Longitudinal Study, first conducted in the spring of 1988, surveyed almost 25,000 eighth grade students in public and private schools, their school administrators, their teachers, and their parents. Follow-up surveys were conducted in 1990, 1992, and 1994. Students were considered to have a disability if parents responded in 1988 that their child had one or more disabilities and had received services for same. See appendix A for a description of data sources.

15 percent of freshmen with disabilities in 1988 and 41 percent in 1998. As a result, the percentage of students with disabilities who reported any other type of disability decreased from 1988 to 1998—for example, students with visual impairments were 31 percent of freshmen with disabilities in 1988 but 13 percent in 1998, while students with orthopedic impairments dropped from 14 to 9 percent (Henderson 1999).

Availability of Institutional Data on Students With Disabilities

To the extent that institutions maintain data on students with disabilities at all, they are only for those students who identify themselves to the institution as having a disability. The basis for identification is varied: 38 percent of the academic institutions surveyed in a recent study by the National Center for Education Statistics (NCES) included students who provided verification of their disabilities, regardless of whether services or accommodations were provided; 28 percent included students to whom services or accommodations were provided; 22 percent included students who identified themselves to the disability services office or coordinator, regardless of verification or provision of services; and 12 percent included students who had been reported to the disability services office or coordinator, regardless of whether that office had any contact with them (U.S. ED/NCES 1999a).The majority of academic institutions do not maintain records of students with disabilities in the general student record system that is accessible to various institutional offices, such as the registrar or the dean of students. About 70 percent of the institutions maintain records of students with disabilities in the disability support services office, and most of those are maintained only in paper files. About 9 percent of institutions maintain no records at all on students with disabilities. Only about one-fifth maintain records of students with disabilities in their general student record system and thus would easily be able to report such data in NCES data collections (U.S. ED/NCES 1999a).

Disability Accommodation

Since the passage of the Americans With Disabilities Act in 1990, more attention has been focused on providing full and equal opportunity for the participation of people with disabilities in employment, public facilities, transportation, state and local government services, and telecommunications. In education, accessibility issues apply not only to those with physical disabilities but also to those with learning disabilities.

Some postsecondary educational institutions now have a disability support services office. In academic year 1997/98, about three-fourths of postsecondary institutions enrolled students with disabilities, and 98 percent provided at least one support service or accommodation for such students. Although students with disabilities were more likely to attend public 2-year institutions than public 4-year institutions, the latter were more likely to provide alternative examination formats or more time to complete exams and to provide readers, note-takers, or scribes, and textbooks on tape (U.S. ED/NCES 2000a).

Demographics

Women

A majority of undergraduate students were women (56 percent) in 1997. Female undergraduates were older, on average, than male undergraduates and were more likely than their male counterparts to be married and to have dependents. Thirty percent of female undergraduates were 30 or older in 1996, compared with 23 percent of male undergraduates. (See appendix table 2-4.)

Minorities

About 29 percent of U.S. citizen and permanent resident undergraduate students in 1997 were nonwhite: 11 percent were black, 10 percent Hispanic, 6 percent Asian, and 1 percent American Indian. (See appendix table 2-2.) Black, Hispanic, and American Indian students were more likely than members of other racial/ethnic groups to be single parents and to come from families with low incomes. Among dependent undergraduates (i.e., students dependent on their parents for financial support), about 12 percent of white students came from families with annual incomes below $20,000, compared with 40 percent of black, 38 percent of Hispanic, 37 percent of American Indian, and 29 percent of Asian students. Black and American Indian students were also older on average than students from other racial/ethnic groups. (See appendix table 2-4.) Hispanic and black students were more likely than those from other racial/ethnic groups to be first-generation college students (U.S. ED/NCES 2000a).

Students with disabilities

On average, undergraduate students with disabilities[5] are older than those without and are more likely to have dependents. In academic year 1995/96, students with disabilities were more likely than those without disabilities to be male (50 percent versus 44 percent); they were also more likely to be white (81 percent versus 71 percent). (See appendix table 2-5.)

Enrollment status

According to the most recent data, women are more likely than men to be enrolled on a part-time basis. (See appendix table 2-6.) Students of both sexes are more likely to attend college part time when they attend public as opposed to private institutions. Part-time enrollment is greater in public than in private institutions for all racial/ethnic groups. In public institutions, Hispanics are more likely to attend college part time than members of other racial/ethnic groups. There was no difference in full- versus part-time enrollment among students with and without disabilities in 1996. (See appendix table 2-5.)

Two-year institutions

More than 10 million students are enrolled in the approximately 1,200 community and technical colleges in the United States. These colleges award almost a half-million associate's degrees and nearly 200,000 certificates each year (AACC 2000). Community and technical colleges are attractive to many students because of their low cost, open admission policies, and flexible schedules. Community colleges often serve as a bridge between high school and 4-year colleges for students who may need additional academic skills or who find 2-year colleges an inexpensive means of completing the first 2 years of a college education before transferring to a 4-year school. About one-third of traditional-age students enrolled in a community college plan to transfer at some point to a 4-year institution. About 22 percent of those postsecondary students who entered a public 2-year institution in 1989/90 had transferred to a 4-year institution within the next 5 years (U.S. ED/NCES 1998).[6]

Although a large proportion of undergraduate enrollment is in 2-year colleges (44 percent), relatively few of these students earn associate's degrees, and fewer still earn them in S&E fields. Among beginning students at 2-year colleges in the 1989/90 school year, only 24 percent had earned an associate's or higher degree by 1994 (U.S. ED/NCES 1998). As is discussed in chapter 3, only 13 percent of these students earning associate's degrees were in S&E—primarily in either computer science or engineering technologies.

Women

Total undergraduate enrollment in 2-year colleges held steady from 1994 through 1997 at about 5.5 million students. Women accounted for more than half (57 percent) of total enrollment in 2-year colleges in 1997; this was the same proportion as in 1990. (See appendix table 2-7.)

Minorities

Higher percentages of Hispanic and American Indian undergraduates than members of other racial/ethnic groups are enrolled in 2-year colleges—54 percent of Hispanics and 51 percent of American Indians in 1997, compared with 46 percent of Asians and blacks and 42 percent of whites. (See text table 2-1.)

Text table 2-1

Percentage of total undergraduate enrollment at 2- and 4-year institutions, by sex and race/ethnicity: Fall 1997

Sex and race/ethnicity	2-year institutions	4-year institutions
Total enrollment	43.9	56.1
Male	42.8	57.2
Female	44.7	55.3
White	42.2	57.8
Asian/Pacific Islander	45.7	54.3
Black	46.2	53.8
Hispanic	54.3	45.7
American Indian/Alaskan Native	51.5	48.5

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey.

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[5] In the National Center for Education Statistics 1995/96 National Postsecondary Student Aid Study, students with disabilities were identified on the basis of their response to the question "Do you have any disabilities, such as hearing, speech, mobility impairment, or vision problems that can't be corrected with glasses?" See appendix A for question wording.

[6] These data are from the National Center for Education Statistics Beginning Postsecondary Students Longitudinal Study. See U.S. ED/NCES (1997) for a detailed discussion of transfer behavior.

The numbers of Asians, blacks, Hispanics, and American Indians (both men and women) enrolled in 2-year institutions have been increasing since 1990. On the other hand, the numbers of white women and white men enrolled in 2-year institutions have declined since the early 1990s. (See appendix table 2-7.)

Hispanic-serving institutions and tribal colleges tend to be 2-year institutions. Just over half of all Hispanic-serving institutions (53 percent) are 2-year institutions of higher education (White House Initiative on Educational Excellence for Hispanic Americans n.d.). Of the 32 tribal colleges or universities in the United States in 2001, the majority offered primarily 2-year certificates and degrees; only 6 offered 4-year degrees (AIHEC 2001).

Students with disabilities

Approximately 46 percent of all students with disabilities enrolled in public 2-year institutions compared with 50 percent of those without disabilities (U.S. ED/NCES 1999b).

Four-year institutions

More than half (56 percent) of all undergraduates, and almost three-fourths (73 percent) of full-time undergraduates, were enrolled in 4-year colleges and universities in 1997. (See text table 2-1 and appendix tables 2-2 and 2-9.) The number of students enrolled in 4-year institutions increased from 1995 through 1997 after a drop in the early 1990s.

Women

The number of women enrolled at 4-year institutions increased from 1990 to 1997, while the number of men decreased. Women accounted for 55 percent of all undergraduate students at 4-year institutions in 1997, up from 53 percent in 1990. (See appendix table 2-8.)

International Comparison of Women's Undergraduate Enrollment

Among first university degree students around the world enrolled in programs leading to an undergraduate degree, women make up more than half of the enrollees in Australia, Canada, France, Italy, Spain, the United Kingdom, and the United States. They are almost half of the enrollees in Mexico and less than half in Germany, Japan, Korea, and Turkey. (See appendix table 2-9.)

Minorities

A majority of white (58 percent), black (54 percent), and Asian (54 percent) undergraduate students were enrolled in 4-year institutions in 1997. (See text table 2-1 and appendix tables 2-2 and 2-9.) Although the numbers of white men and women enrolled in such institutions in that year had declined from their 1991 peaks, the numbers of Asian, black, Hispanic, and American Indian men and women enrolled in 4-year institutions had been increasing. In 1997, 11 percent of U.S. citizen and permanent resident undergraduates at 4-year institutions were black, 8 percent Hispanic, 6 percent Asian, and 1 percent American Indian; the remaining 74 percent were white.

Students with disabilities

Students with disabilities are less likely to enroll in 4-year colleges than those without disabilities: 40 percent versus 47 percent. (See appendix table 2-5.)

Declining Male Enrollments

The decline in the percentage of undergraduates who are male (from 58 percent of all undergraduates in 1968 to 44 percent in 1997) has been the subject of numerous conferences and articles and has led to some calls for "affirmative action" for males (Brownstein 2000). These declining percentages have occurred in total enrollment, total bachelor's degrees, and S&E bachelor's degrees and among all racial/ethnic groups. In absolute terms, only the numbers of white male students have decreased; the numbers of Asian, black, Hispanic, and American Indian male undergraduates and bachelor's degree recipients have increased since at least 1989.

The greatest disparity between male and female enrollment (and also between male and female degree attainment) occurs among minorities and low-income students (King 2000). This disparity between male and female enrollment and the decrease in the percentage of undergraduates who are male is attributable in the case of Asians, blacks, Hispanics, and American Indians to a more rapid increase in the numbers of female than of male students. In the case of whites, the decrease in the percentage of undergraduates who are male is due to a decline in the number of male students, concurrent with an increase in the number of female students. The white college-age population (18- to 24-year-olds) declined from 1990 through 1997 across both sexes, but white women's enrollment continued to increase.

Field choice

Large differences exist between men and women, but lesser differences exist by race/ethnicity (with the exception of Asians), regarding intentions to major in science and engineering. In 2000, 29 to 35 percent of white, black, Hispanic, and American Indian freshmen and 42 percent of Asian freshmen intended S&E majors. (See appendix table 2-10.) Roughly equal percentages of whites, blacks, Hispanics, and American Indians intended to major in the physical and biological sciences, mathematics, and engineering. Black and Asian freshmen were more likely than members of other groups to plan majors in computer science, and Asian freshmen were more likely to plan majors in the biological sciences and engineering. Black, Hispanic, and American Indian freshmen were more likely than whites or Asians to plan majors in the social and behavioral sciences. Within each racial/ethnic group, women were less likely than men to intend to major in S&E overall; however, women were more likely than men to intend to major in the social and behavioral sciences and in the biological and agricultural sciences.

Students with disabilities are as likely as students without disabilities to choose S&E majors at 4-year institutions. Among undergraduates in the 1995/96 school year, roughly equal percentages of students with and without disabilities were majoring in science and engineering. (See appendix table 2-5; see appendix A for question wording.)

Engineering enrollment

Overall, total undergraduate engineering enrollment decreased during the 1990s, dropping from approximately 380,000 in 1990 to 361,000 in 1999.

Women

Women accounted for 20 percent of total undergraduate enrollment in engineering programs in 1999, up from 16 percent in 1990. (See appendix table 2-11.) They accounted for a slightly lower percentage (19 percent) of full-time first-year engineering enrollment in 1999. The number of women enrolled in undergraduate engineering programs increased every year from 1990 to 1998, dropping slightly in 1999; the number of men declined in most years during the 1990–99 period.

Minorities

Enrollment of white students in engineering characterized the general pattern of total undergraduate engineering enrollment, but the trends for other racial/ethnic groups followed different patterns. Asian, Hispanic, and American Indian enrollments in engineering generally increased between 1990 and 1999. Black enrollment peaked in 1993 and dropped in 4 of the 6 years from 1994 to 1999. (See appendix table 2-11.)

The percentages of Asian, black, Hispanic, and American Indian undergraduates enrolled in engineering programs increased between 1990 and 1999, while the percentage of whites decreased. (See figure 2-4 and appendix table 2-11.)

Asian, black, Hispanic, and American Indian women accounted for larger percentages of engineering enrollment of their respective racial/ethnic groups than did white women. Black women were 34 percent of black engineering enrollment; Asian, Hispanic, and American Indian women were between 23 and 25 percent of the enrollment of their respective racial/ethnic groups; and white women were 18 percent of white engineering enrollment in 1999. (See appendix table 2-12.)

Financial aid

One of the primary means of access to a university is financial aid in the form of loans, grants, and scholarships. After considering the academic reputation and door-opening opportunities, the offer of financial assistance is the next most important reason college freshmen cite in choosing to attend a particular university (HERI 2000). Despite a recent increase in student aid across the United States, many academically qualified low-income students still cannot afford to go to or stay in college (ACSFA 2001). In the last decade, the cost of college attendance has increased as a share of family income only among the lowest income students. Even after all possible sources of aid are exhausted, low-income students still have an average of $3,500 in unmet needs (ACSFA 2001).

Female undergraduates are more likely than male to receive financial aid (52 percent versus 47 percent in 1995/96); blacks, Hispanics, and American Indians are more likely than whites and Asians to receive financial aid. (See appendix table 2-13.) The average amount of aid received in 1995/96, the most recent academic year for which data are available, was smaller for women than for men and smaller for blacks, Hispanics, and American Indians than for whites and Asians.

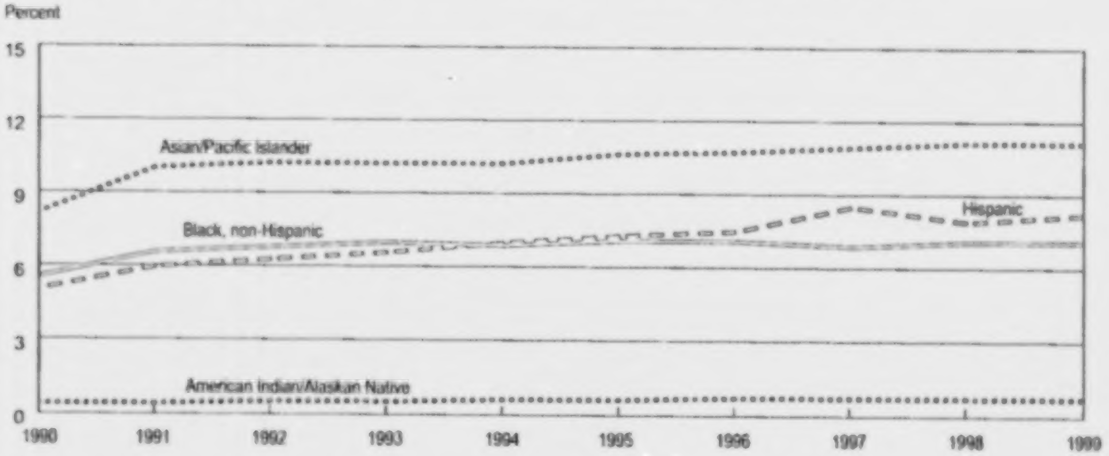
There were no statistically significant differences between students with and without disabilities in their receipt of financial aid in 1995/96: about half of both groups received financial aid. (See appendix table 2-5.)

Retention

Some of the factors related to persistence in undergraduate education are age, enrollment status, socioeconomic status, and level (i.e., 2 year versus 4 year) of first institution. Those entering postsecondary education at age 17 or 18 are more likely to complete a bachelor's degree in 5 years than those entering at older ages. Those who initially enroll on a full-time basis are more likely to complete their degree than

Figure 2-4

Percentage of undergraduate engineering students who are members of minority groups: 1990–99



NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: American Association of Engineering Societies, Engineering Workforce Commission, special tabulations (Washington, DC).

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those enrolled part time.[7] Students from families with higher income and higher level of parental education are more likely to complete their degree than those whose families have lower incomes and less education. And those who begin undergraduate programs in 4-year institutions are more likely to attain a bachelor's degree within 5 years than those who begin in 2-year institutions (U.S. ED/NCES 1998).

All of these factors are related to differences in undergraduate retention by race/ethnicity. Blacks, Hispanics, and American Indians are less likely than whites and Asians to complete college. Blacks enter college at older ages. Blacks, Hispanics, and American Indians are more likely than whites and Asians to come from low-income families. Hispanics are more likely than members of other groups to begin undergraduate programs in 2-year institutions.

Women

Women and men are about equally likely to graduate from college. Among those who were 25 to 29 years old in 2000 and had completed high school, 34 percent of women and 32 percent of men had earned a bachelor's degree or higher. (See appendix table 2-1.)

Women are more likely than men to complete a bachelor's degree within 5 years. Among students who entered a bachelor's degree program in 1989, 50 percent of women compared to 41 percent of men had earned a bachelor's degree by spring 1994.[8] (See appendix table 2-14.) Additionally, a higher percentage of men than of women (31 versus 26 percent) had earned no degree and were no longer enrolled toward a bachelor's degree 5 years later.

Data from the Higher Education Research Institute and the National Center for Education Statistics suggest that women do not have higher attrition from S&E programs than do men. The percentage of freshmen women intending S&E majors in 1994 (27 percent) is close to the percentage earning S&E bachelor's degrees in 1998 (28 percent). (See appendix table 2-15.) Furthermore, longitudinal data indicate that higher percentages of female than of male S&E students in academic year 1989/90 completed degrees in science and engineering by 1994, and a lower percentage of female than of male S&E students switched out of science and engineering during this time (U.S. ED/NCES 2000b).

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[7] The source publication (U.S. ED/NCES 1998) does not indicate whether there is any interaction between age and enrollment status in persistence in undergraduate education.

[8] These data are from the National Center for Education Statistics Beginning Postsecondary Students Longitudinal Study, which followed a group of students first enrolled in undergraduate institutions in the 1989/90 school year through 1994. The data permit comparisons by sex, race/ethnicity, and disability status in persistence toward a bachelor's degree.

Minorities

Blacks and Hispanics are less likely than whites to graduate from college. Among those who were 25 to 29 years old in 2000 and had completed high school, 21 percent of blacks and 15 percent of Hispanics, compared to 36 percent of whites, had earned bachelor's degrees or higher. (See appendix table 2-1.) Small sample sizes in the Census Bureau's Current Population Survey do not permit reporting of data on the educational attainment of Asians and American Indians.

Black and Hispanic students are less likely than their white and Asian counterparts to complete a bachelor's degree within 5 years. Forty-eight percent of whites, 47 percent of Asians, 34 percent of blacks, and 32 percent of Hispanics who entered a baccalaureate program in 1989 had earned their degree by spring 1994. Thirty-seven percent of both black and Hispanic students, compared with 27 percent of white students and 26 percent of Asian students, had earned no degree and were no longer enrolled in a bachelor's program in 1994. (See appendix table 2-14.) Again, small sample sizes do not permit reporting of data on the undergraduate persistence and attainment of American Indian students.

Blacks, Hispanics, and American Indians do not appear to have higher attrition rates vis-à-vis science and engineering than whites. About 30 to 35 percent of white, black, Hispanic, and American Indian freshmen intended S&E majors in 1994. Similarly, about 30 to 35 percent of white, black, Hispanic, and American Indian bachelor's recipients in 1998 received their degrees in these fields. (See appendix table 2-15.) Longitudinal data show little difference by race/ethnicity for blacks, Hispanics, and whites in natural science and engineering enrollment rates[9] across 5 academic years from 1989/90 through 1993/94—approximately 17 percent (U.S. ED/NCES 2000b).

Students with disabilities

Students with disabilities are less likely than those without to be enrolled in a bachelor's degree program or to have earned a bachelor's degree within 5 years. Fifty-three percent of students with disabilities who were enrolled in the 1989/90 academic year were still enrolled or had attained a degree by 1994, compared with 64 percent of those without disabilities. (See appendix table 2-16 and appendix A for question wording.) Conversely, a higher proportion of those with disabilities (47 percent) than of those without (36 percent) had left college without earning a degree or certificate.

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[9] Defined as enrollment in science and engineering (excluding the social sciences and psychology) divided by total undergraduate enrollment.

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Chapter 3

Undergraduate Degrees

Overview

The numbers and percentages of women and minorities earning science and engineering associate's and bachelor's degrees were at all-time highs in 1998. Close to half of all S&E bachelor's degrees were earned by women in 1998, and in some S&E fields, women earned far more than half of the bachelor's degrees. On the other hand, in a few S&E fields, women earned far less than half of the baccalaureate degrees awarded, and their numbers and percentages were increasing very slowly or not at all. The numbers of bachelor's degrees earned by Asians, blacks, Hispanics, and American Indians in the 1990s increased in both S&E and non-S&E fields. In contrast, the numbers of S&E and non-S&E bachelor's degrees earned by white males decreased.

This chapter examines undergraduate degree conferral at both 2- and 4-year institutions. It also examines undergraduate debt.

Associate's degrees

Only 13 percent of all associate's degrees are awarded in science and engineering. (See appendix table 3-1.) Although an associate's degree is the terminal degree for some people, others continue their education and subsequently earn higher degrees. About 14 percent of academic year 1997/98 S&E bachelor's degree recipients had previously earned an associate's degree. (See text table 3-1.)

Text table 3-1

Percentage of academic year 1997/98 S&E baccalaureate recipients who had previously earned an associate's degree, by sex, race/ethnicity, and disability status: 1999

Sex, race/ethnicity, and disability status	Percent
Total	14
Male	13
Female	15
White, non-Hispanic	14
Asian/Pacific Islander	8
Black, non-Hispanic	17
Hispanic	18
American Indian/Alaskan Native	37
Persons without disabilities	14
Persons with disabilities	24

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates.

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Women

The number of associate's degrees in S&E awarded to women rose from 17,571 in 1990 to 22,931 in 1998; concurrently, the number awarded to men dropped from 55,177 to 48,075. (See appendix table 3-1.) Women earned 32 percent of the associate's degrees in S&E in 1998, up from 24 percent in 1990. In 1998, they earned from 45 to 67 percent of the associate's degrees awarded in computer science, the biological sciences, the physical sciences, psychology, the social sciences, and interdisciplinary sciences; they earned only 15 percent of those awarded in engineering and engineering technologies. (See appendix table 3-1.)

The largest numbers of S&E associate's degrees are awarded in computer science and engineering technologies. From 1990 to 1998, the number of associate's degrees in computer science awarded to either men or women increased—particularly from 1996 to 1998—with the number of awards to men increasing faster than that for women. (See figure 3-1.) Concurrently, associate's degrees in engineering technologies decreased more rapidly for men than for women.

Minorities

In 1998, blacks earned 9 percent of all the associate's degrees awarded in science and engineering, Hispanics 8 percent, Asians 5 percent, and American Indians 1 percent.[1] In this context, note that, as mentioned in chapter 2, Hispanics and American Indians are more likely than other groups to enroll in 2-year colleges.

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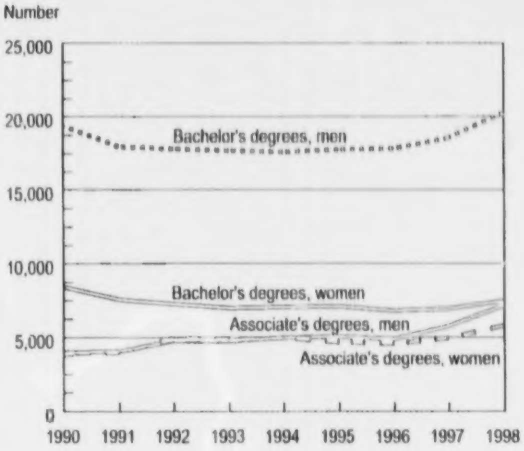
[1] Data on race/ethnicity are collected only for U.S. citizens and permanent residents. Comparable data are not collected for students on temporary visas.

Figure 3-1

Bachelor's and associate's degrees awarded in computer science, by sex: 1990–98



SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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The number of associate's degrees in S&E increased for each racial/ethnic minority group and decreased for white students from 1990 to 1998. (See appendix table 3-2.) The number of associate's degrees earned in computer science increased for all racial/ethnic groups from 1990 to 1998; again, this was particularly notable in the 1996–98 period for most groups.

Minority women

In 1998, minority women earned a larger proportion of the associate's degrees in S&E awarded to their respective racial/ethnic group than did white women. Women earned 44 percent of the S&E associate's degrees awarded to American Indians, 38 percent of those to blacks, 36 percent of those to Hispanics, 34 percent of those to Asians, and 31 percent of those to whites. (See appendix table 3-3.)

In some S&E fields—the biological sciences, psychology, and the social sciences—women earned well over half of the associate's degrees awarded to their respective racial/ethnic group. In the physical sciences, the pattern held for all racial/ethnic groups except white women, who earned just less than half of the associate's degrees in this field. In computer science, women earned more than half of the associate's degrees awarded to blacks and American Indians.

Students with disabilities

As noted in the previous chapter, college students with disabilities are more likely to enroll in 2-year colleges than are those without disabilities. Similarly, students with disabilities earning bachelor's degrees are more likely than those without to have earned an associate's degree. Among S&E bachelor's degree recipients in 1997 and 1998, 24 percent of those with disabilities, compared with 14 percent of those without disabilities, had previously earned an associate's degree. (See text table 3-1.)

Bachelor's degrees

The baccalaureate is the most prevalent degree in science and engineering, accounting for 76 percent of all degrees awarded in S&E (NSF/SRS 2001). In 1998, as has been the case historically, about one-third of all bachelor's degree awards were earned in S&E fields. The total number of S&E bachelor's degrees awarded, as well as the total number of baccalaureate degrees awarded in non-S&E fields, increased between 1990 and 1998. (See appendix table 3-4.)

Women

The number of bachelor's degrees in S&E awarded to women increased from 140,012 in 1990 to 190,397 in 1998. (See appendix table 3-4.) Concurrently, the number of S&E bachelor's degrees awarded to men fluctuated around 200,000. (See figure 3-2.) Women earn more bachelor's degrees in non-S&E fields than do men; in 1998, they accounted for 60 percent of all such awards. (See appendix table 3-4.)

Women earn nearly half of all S&E baccalaureate awards. The percentage of bachelor's degrees in S&E awarded to women has been steadily increasing; in 1998, it reached 49 percent. (See appendix table 3-4.) Also, the share of bachelor's degrees awarded to women in almost all major S&E fields increased during the 1990s. Mathematics was one exception to this trend; in this field, women's share of baccalaureate awards hovered at around 46 percent from 1990 to 1998. Another exception was computer science: in this field, the number of awards dropped for both men and women from 1990 to 1996. The decline for women was greater, though, than for men; and over the 1990–98 period, the proportion of computer science bachelor's degrees awarded to women dropped from 30 percent to 27 percent. (See figure 3-1 and appendix table 3-4.)

In 1998, women earned almost three-fourths of the bachelor's degrees awarded in psychology and over half of those granted in the biological sciences and in most social sciences. They earned 47 percent of the bachelor's degrees

Women's Colleges

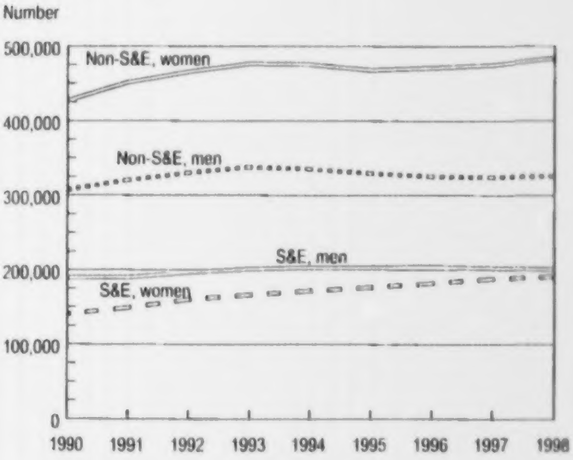
Women's colleges were founded in the mid- to late 19th century to promote and expand educational opportunities for women (U.S. Department of Education 1997). The number of women's colleges in the United States is declining: while there were 188 in 1989, there are now only 73. Several women's colleges have closed or merged in the last decade; others have become coeducational (Reisberg 2000). Because of their small size (most have fewer than 2,500 students), women's colleges are not a major source of bachelor's degrees for women; this is true both for bachelor's degrees in general and for bachelor's degrees in S&E. About 2 percent of all bachelor's degrees awarded to women were earned at women's colleges in 1998. (See appendix table 3-5.) Some women's colleges do, however, produce large numbers of female S&E graduates. For example, Spelman College is the top institution granting bachelor's degrees to black women in S&E. Women's colleges are also among the top baccalaureate-origin institutions for S&E doctorate recipients (see chapter 5).

International Comparison of Women's Undergraduate Degrees

Women earned a little more than half of first university degrees in all fields in Australia, Canada, France, Italy, Spain, the United Kingdom, and the United States. They earned less than half of all first university degrees in Germany, Japan, Korea, Mexico, and Turkey. (See appendix table 3-7 and "International Comparison of Women's Undergraduate Enrollment" in chapter 2 on undergraduate enrollment.)

Across countries with field of degree data, women earned roughly similar proportions of degrees in some fields. For example, women earned between 54 and 64 percent of life science degrees in all countries providing data, and from 6 to 21 percent of engineering degrees. In other fields—for example, the physical sciences, mathematics, the agricultural sciences, and the social sciences—there were greater differences in the percentage of degrees awarded to women by country. Women earned a higher percentage of mathematics/statistics/computer science degrees in Italy, Korea, and Turkey than in most other countries. On the other hand, they earned a much lower percentage of social science degrees in Turkey and Korea than in most other countries.

Figure 3-2
Bachelor's degrees awarded in S&E and non-S&E fields, by sex: 1990–98



SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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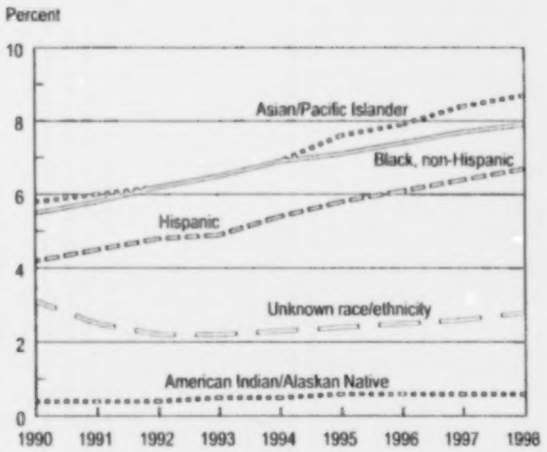
in mathematics, 46 percent in chemistry, and 43 percent each in the agricultural and ocean sciences. Women earned approximately a third of the bachelor's degrees in several fields—the earth sciences (38 percent), astronomy (35 percent), chemical engineering (33 percent), and economics (32 percent). On the other hand, less than 20 percent of the bachelor's degrees awarded in 1998 in aerospace engineering, electrical engineering, mechanical engineering, and physics went to women. (See appendix table 3-6.)

Minorities

The numbers of bachelor's degrees earned by Asians, blacks, Hispanics, and American Indians in both S&E and non-S&E fields increased each year from 1990 to 1998. In contrast, the numbers of S&E and non S&E bachelor's degrees earned by whites increased and then decreased in the 1990s, resulting in a small overall increase. (See appendix table 3-8.) In science and engineering as a whole and within S&E fields, both the numbers and percentages of degrees earned by nonwhite racial/ethnic groups have risen since 1990. (See figure 3-3 and appendix table 3-9.) More recent data on bachelor's degrees in engineering show continued increases in degree awards to Asians, Hispanics, and

Figure 3-3

Percentage of bachelor's degrees earned in S&E, by race/ethnicity: 1990–98



NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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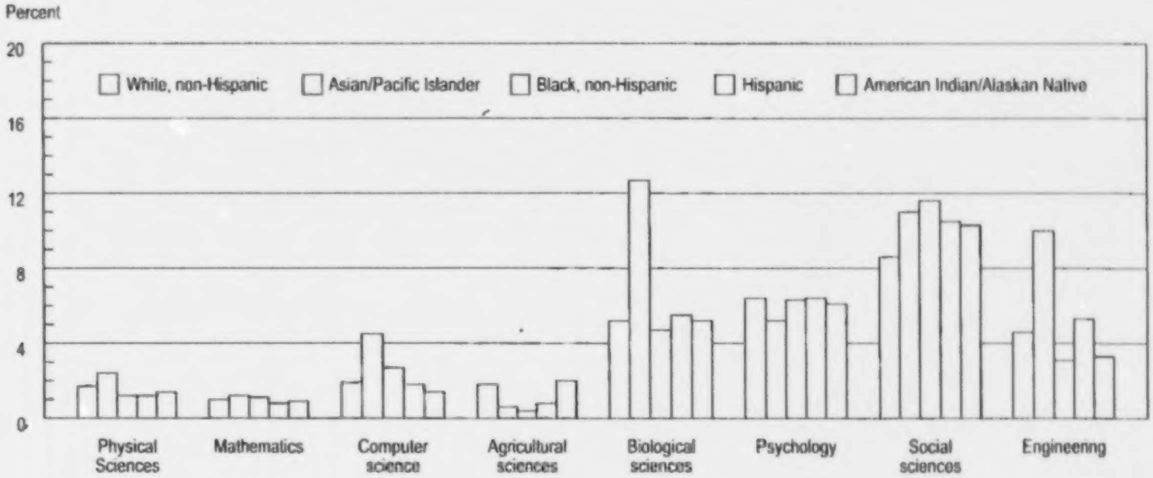
American Indians. The number of bachelor's degrees earned by blacks in engineering, which increased from 1990 to 1997, has remained relatively stable over the last several years. (See appendix table 3-10.) The number of engineering bachelor's degrees earned by whites, which declined through the 1990s, increased in 2000.

Blacks, Hispanics, and American Indians earn roughly the same percentages of S&E bachelor's degrees as they do of non-S&E degrees. Blacks earned 8 percent of both the S&E and non-S&E bachelor's degrees awarded to U.S. citizens and permanent residents in 1998. Hispanics earned 7 percent of each, and American Indians earned less than 1 percent of each. In contrast, Asians earned 9 percent of S&E, but only 5 percent of non-S&E, bachelor's degrees in 1998. With the exception of Asians, for whom almost half of all bachelor's degrees received are in S&E, about one-third of all bachelor's degrees earned by each racial/ethnic group are in science and engineering.

The contrast in field distribution among whites, blacks, Hispanics, and American Indians on the one hand and Asians on the other is apparent within S&E fields as well. White, black, Hispanic, and American Indian S&E baccalaureate recipients share a similar distribution across broad S&E fields. For example, in 1998, between 10 and 12 percent of all baccalaureate recipients in each of these racial/ethnic groups earned their degrees in the social sciences, roughly 5 percent

Figure 3-4

Percentage of all bachelor's degrees awarded in various S&E fields, by race/ethnicity: 1998



NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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Where Minorities Earn Their Degrees

Some colleges and universities educate a disproportionate share of undergraduates who are members of racial/ethnic minorities. For example, America's historically black colleges and universities (HBCUs) continue to play an important role in educating and producing black S&E bachelor's degree recipients. In 1998, as in 1990, 29 percent of the blacks who received bachelor's degrees in S&E earned them at HBCUs. (See appendix table 3-12.) HBCUs awarded 52 percent of the bachelor's degrees received by blacks in the agricultural sciences, 43 percent of those in both the physical sciences and mathematics, and 42 percent of those in the biological sciences in 1998. (See appendix table 3-12.)

About one-third of S&E bachelor's degrees to Hispanics are earned at Hispanic-serving institutions (HSIs). Unlike HBCUs, the institutions classified as HSIs are updated each year. Among the criteria for inclusion as an HSI, as per the Higher Education Act of 1965, as amended, and 20 U.S.C. 1059c, are that the institution has at least 25 percent Hispanic full-time undergraduate enrollment and that at least 50 percent of its Hispanic students are low income. Hispanics are particularly likely to earn bachelor's degrees in the physical sciences and biological sciences at HSIs—47 percent of the physical science and 42 percent of the biological science bachelor's degrees earned by Hispanics were awarded by HSIs in 1998. (See appendix table 3-13.)

Almost all of the S&E bachelor's degrees for American Indians are granted by non-tribal colleges. Tribal colleges and universities (TCUs), first established in the late 1960s, are academic institutions created and chartered, for the most part, by one or more tribes (U.S. ED/NCES 1998). As of 1998, there were 30 TCUs, most of which were located on Indian reservations. Only six TCUs are 4-year colleges or universities; the rest are 2-year schools. Of the six TCUs that offer bachelor's degrees, two offer baccalaureates in S&E. In 1998, those two awarded 16 bachelor's degrees to American Indians in science and none in engineering; 13 of these degrees were in the social sciences. (See appendix table 3-14.)

in the biological sciences, and about 2 percent in computer science. Asian baccalaureate recipients earned higher proportions of their baccalaureates in the biological sciences and engineering. (See figure 3-4.) Differences among racial/ethnic groups are somewhat greater by detailed S&E fields. (See appendix table 3-11.)

Minority women

The numbers of bachelor's degrees awarded in science and engineering increased from 1990 to 1998 for women in each racial/ethnic group, rising from approximately 113,000 to 137,000 for whites; 8,000 to 16,000 for Asians; 10,000 to 19,000 for blacks; 6,000 to 14,000 for Hispanics; and 600 to 1,300 for American Indians. (See appendix table 3-15.) The numbers of bachelor's degrees granted to Asian, black, Hispanic, and American Indian men in S&E also increased during this period. In contrast, the number of bachelor's degrees awarded to white men dropped from approximately 158,000 in 1990 to 153,000 in 1998. (See appendix table 3-16.)

Within each racial/ethnic group in 1998, women accounted for a lower percentage of the bachelor's degrees in S&E than in non-S&E fields. In contrast to white and Asian women, however, black, Hispanic, and American Indian women earned more than half of the bachelor's degrees in S&E awarded to their respective racial/ethnic group in 1998. (See appendix table 3-17.)

Students with disabilities

The National Center for Education Statistics collects data on bachelor's or master's degree awards, but does not include measures of disability status. Further, as noted in the sidebar on the "Availability of Institutional Data on Students With Disabilities," in chapter 2, colleges and universities do not maintain data in their central records that identify students with disabilities. Therefore, degree data collected from colleges and universities are not reported by disability status.

Debt at graduation

With regard to undergraduate debt, little difference existed between men and women, but some differences existed among racial/ethnic groups and between students with and without disabilities in 1999. (See appendix table 3-18.) Overall, 60 percent of S&E bachelor's recipients in 1997 and 1998 had borrowed money to finance their undergraduate education. Similar percentages of men and women (60 and 61 percent, respectively) reported still having undergraduate debt in 1999, and the amounts owed were also similar (between $13,500 and $14,300). Blacks had a higher average debt than whites, Asians, and Hispanics. S&E bachelor's degree recipients with disabilities were more likely than those without to report having borrowed, but the average amounts of debt (among those with debt) in 1999 did not differ between these two groups.

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Chapter 4

Graduate Enrollment

Overview

Graduate enrollment in science and engineering[1] rose in 1999 after 5 consecutive years of decline. (See appendix table 4-1.) The growth was entirely attributable to increases in enrollment among students with temporary visas, women, and minorities. The number of white male graduate students continued to decline in 1999, as it had since at least 1994 (the first year data were available by sex and race jointly). Among U.S. citizens and permanent residents, the numbers of female graduate students in all racial/ethnic groups increased in 1999, as did the numbers of Asian, black, and Hispanic men.

This chapter examines enrollment rates of recent recipients of S&E bachelor's degrees, graduate enrollment trends, graduate fields of study, full- and part-time enrollment patterns, sources of financial support, debt at graduation, and graduate school attrition rates.

Transition to graduate school

Women

Longitudinal data show that there is no more attrition for female bachelor's degree recipients—regardless of degree field—than for male between baccalaureate receipt and graduate enrollment. Among S&E bachelor's degree recipients, women are more likely than men to pursue additional study. In 1999, 33 percent of the women and 28 percent of the men who had received an S&E baccalaureate in academic year 1996/97 or 1997/98 were enrolled in an educational program either full or part time. (See text table 4-1.)

Women are, however, a smaller percentage of S&E graduate students than of S&E bachelor's degree recipients. As noted in the previous chapter, women received 49 percent of all baccalaureates awarded in S&E fields in 1998. In 1999, women constituted 45 percent of U.S. citizen and permanent resident graduate students in S&E fields. This difference in participation in bachelor's versus graduate study is particularly evident in certain S&E fields, notably the physical sciences and mathematics. (See text table 4-2.) Within other broad S&E fields, women account for similar percentages of total bachelor's recipients and of graduate students. Small sample sizes do not permit further exploration of the differences in the physical sciences and mathematics. It is possible, for example, that women with baccalaureates in these fields may pursue further study in non-S&E fields to a greater extent than do men.

Minorities

Members of all racial/ethnic groups,[2] with the exception of Asians, have comparable levels of participation in further study following receipt of an S&E baccalaureate. Among those who received S&E bachelor's degrees in 1996/97 and 1997/98, between 29 and 30 percent of whites, Hispanics, and blacks were enrolled full or part time in April 1999; the comparable percentage for Asians was 36 percent. (See text table 4-1.)

The percentages of blacks, Hispanics, and American Indians among those receiving S&E baccalaureates are similar to the respective rates of representation for these groups among S&E graduate students. Disaggregation by field shows that these similarities of representation occur across most S&E fields. (See text table 4-2.) In computer science, however, blacks and Hispanics accounted for smaller percentages of graduate students enrolled in 1999 than of the bachelor's recipients of 1998, while Asians constituted a much higher percentage.

Students with disabilities

Students with disabilities, who constituted 4 percent of the 1996/97 and 1997/98 S&E bachelor's degree recipients, were just as likely as those without disabilities to be enrolled full or part time in an educational program in 1999. Among this cohort, 30 percent of students with and without disabilities were enrolled in April 1999. (See text table 4-1.)

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[1] Data in this chapter cover graduate science and engineering enrollment in academic institutions in the aggregate United States, which includes the 50 states, the District of Columbia, and the U.S. territories and outlying areas (American Samoa, the former Canal Zone, the Northern Mariana Islands, Puerto Rico, the U.S. Virgin Islands, and the Trust Territory of the Pacific Islands).

[2] Data refer to U.S. citizens and permanent residents only.

Text table 4-1

Enrollment, degree attainment, and employment status of academic year 1996/97 and 1997/98 S&E bachelor's degree recipients: April 1999

Sex, race/ethnicity, and disability status	Total number	Enrollment status			Degree attainment		Employment status		
		Full-time student	Part-time student	Not a student	Had attained a master's or higher degree	Had not attained a master's or higher degree	Employed full time	Employed part time	Not employed
		Percent							
Total	734,189	22.3	8.0	69.7	2.0	98.0	72.1	12.1	15.8
Male	360,298	21.3	6.7	71.9	2.2	97.8	75.6	10.3	14.1
Female	373,891	23.2	9.3	67.6	1.7	98.3	68.8	13.8	17.5
White, non-Hispanic	553,942	21.7	8.0	70.3	1.9	98.1	72.7	12.4	14.9
Asian/Pacific Islander	70,832	27.5	8.4	64.1	3.9	96.1	66.3	10.9	22.9
Black, non-Hispanic	51,027	20.4	8.8	70.7	1.4	98.6	75.2	9.9	14.9
Hispanic	53,639	22.7	7.7	69.5	1.1	98.9	71.8	12.6	15.6
American Indian/Alaskan Native	4,749	S	S	S	S	S	S	S	S
Without disabilities	706,655	22.3	8.0	69.7	2.0	98.0	72.3	12.1	15.7
With disabilities	27,534	20.6	9.3	70.0	1.4	98.6	69.1	11.4	19.5

S suppressed for reasons of data reliability

NOTES: Details may not add to totals because of rounding. Percentages were calculated on rounded data.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates.

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Enrollment trends

Women

In 1999, 41 percent of the graduate students in S&E fields were women, up from 34 percent in 1990. The number of women enrolled in S&E graduate programs also increased over this time period—rising from 133,737 in 1990 to 168,468 in 1999. (See figure 4-1 and appendix table 4-2.) From 1990 to 1999, the number of female graduate students increased in all broad S&E fields, except mathematics, and the percentage of graduate students who are women increased both in science and engineering as a whole and in each broad S&E field. (See figure 4-2.) The number of men enrolled in graduate S&E programs declined during the same time period—dropping from 263,391 in 1990 to 242,840 in 1999. (See appendix table 4-3.)

The percentage of first-time S&E graduate students who are women is also rising. In 1999, 41 percent of full-time first-time S&E graduate students were female, compared to 35 percent in 1990. (See appendix table 4-4.) As much of this increase can be attributed to a decline in the number of men among first-time students as to an increase in the number

Top Institutions Enrolling Female Graduate Students in S&E

The top institutions enrolling female graduate students in S&E are, for the most part, large public research institutions—as are the top institutions enrolling their male counterparts. The University of Minnesota, University of Colorado, and University of California–Berkeley were the top institutions enrolling female S&E graduate students in 1999. (See appendix table 4-5.)* Stanford University, the University of Michigan, and the Massachusetts Institute of Technology were the top institutions enrolling male S&E graduate students.

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*The top institutions are ranked by number of women rather than percentage of women. Ranking by percentage results in high rankings for institutions with a single small S&E department, all or most of whose graduate students are women. It results in low rankings for large institutions with many S&E departments, half or more of whose graduate students are women. This distinction is important: only 2 of the top 20 schools ranked in terms of ***number*** of female students are included in the top 20 institutions ranked by ***percentage*** of female students.

Text table 4-2

Women and minorities as percentages of students earning S&E bachelor's degrees and of students enrolled in graduate S&E programs, by field: 1998 and 1999

Field	Women (all races/ethnicities)		Asians/Pacific Islanders (both sexes)		Blacks (both sexes)		Hispanics (both sexes)		American Indians/ Alaskan Natives (both sexes)	
	Bachelor's degree 1998	Graduate enrollment 1999	Bachelor's degree 1998	Graduate enrollment 1999	Bachelor's degree 1998	Graduate enrollment 1999	Bachelor's degree 1998	Graduate enrollment 1999	Bachelor's degree 1998	Graduate enrollment 1999
Science and engineering, total	48.6	45.0	9.0	9.1	8.2	6.7	6.8	5.5	0.6	0.5
Physical sciences	39.2	30.0	10.8	8.6	7.2	4.6	5.4	4.6	0.6	0.4
Earth, atmospheric, and ocean sciences	37.0	42.1	2.2	3.5	1.7	1.8	2.8	3.3	0.6	0.5
Mathematics	46.9	38.5	7.2	9.7	8.3	5.7	5.2	4.3	0.6	0.3
Computer science	26.6	29.3	12.6	24.2	10.4	5.9	5.8	3.4	0.4	0.3
Agricultural sciences	42.9	42.8	2.5	3.2	2.3	2.9	3.6	4.5	0.9	0.7
Biological sciences	55.4	52.7	13.5	9.7	6.9	4.9	6.5	4.7	0.6	0.4
Psychology	74.4	72.4	5.8	4.1	9.3	7.6	7.5	7.2	0.7	0.6
Social sciences	50.2	53.0	7.2	4.8	10.4	11.3	7.6	7.0	0.7	0.8
Engineering	19.0	20.6	12.4	13.6	5.4	4.9	7.3	4.9	0.5	0.4

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCES: Tabulations by National Science Foundation, Division of Science Resources Statistics (NSF/SRS); data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, and NSF/SRS, Survey of Graduate Students and Postdoctorates in Science and Engineering.

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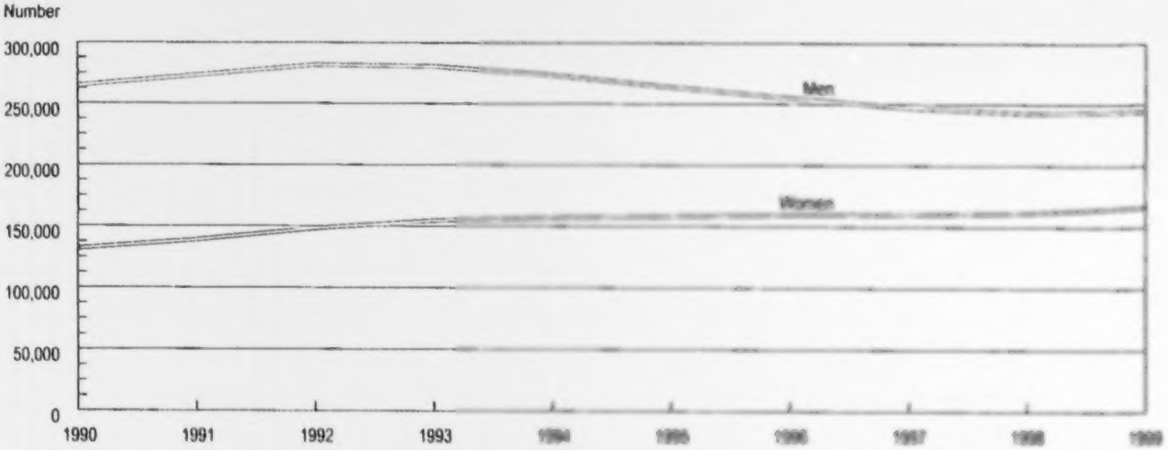
Figure 4-1
S&E graduate students, by sex: 1990–99



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

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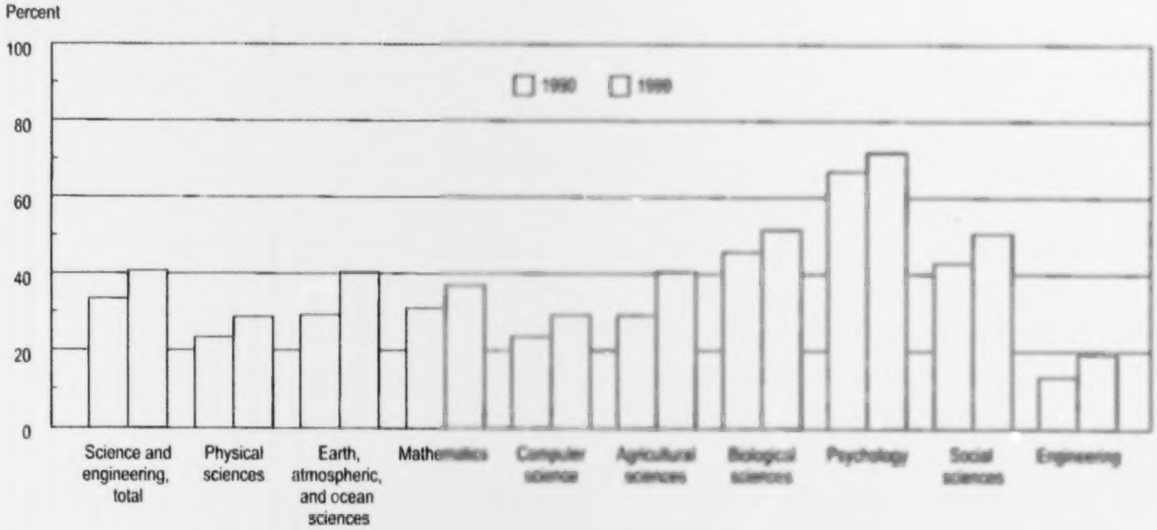
Figure 4-2
Proportion of S&E graduate students who are women, by field: 1990 and 1999



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

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of women. Male full-time first-time S&E graduate student enrollment dropped 11 percent between 1990 and 1999 (from 49,502 to 44,216). Concurrently, the number of women increased 15 percent—from 27,068 to 31,031.

Minorities

Across all disciplines, the numbers of Asian and American Indian graduate students increased 1 percent, and the numbers of black and Hispanic graduate students increased 3 percent, between 1998 and 1999.[3] At the same time, the number of white graduate students decreased 2 percent (Syverson 2001).

The numbers of minority graduate students in S&E have increased since 1990. (See figure 4-3.) The number of black S&E graduate students rose from 12,774 in 1990 to 20,341 in 1999, of Hispanics from 10,159 to 16,514, of American Indians from 1,054 to 1,557, and of Asians from 17,155 to 27,562. (See appendix table 4-6.) In contrast, the number of white S&E graduate students dropped over that time period—from 238,465 in 1990 to 216,865 in 1999. As noted in chapter 2, the white college-age population (18- to 24-year-olds) declined from 1990 through 1997.

During the 1990s, the percentage of minority graduate students increased in science and engineering as a whole as well as in each broad S&E field. Asian students increased

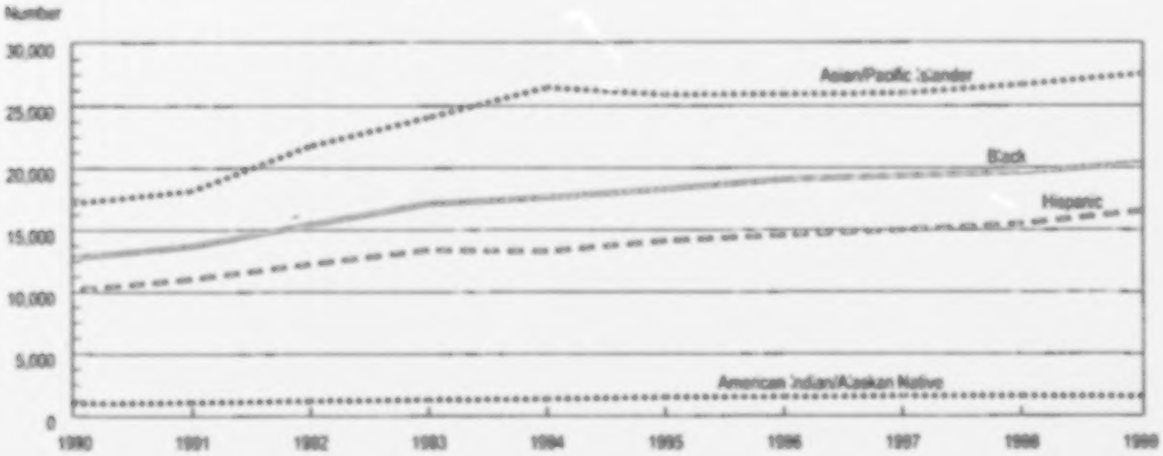
Top Institutions Enrolling Minority Graduate Students in S&E

The top institutions enrolling minority graduate students in S&E reflect the regional demographics of minority populations. More than half (55 percent) of the nation's blacks lived in the South in 1999; 44 percent of Hispanics and 53 percent of Asians lived in the West. The country's American Indian population was similarly concentrated in the West, with 50 percent living in six states—Oklahoma, California, Arizona, New Mexico, Alaska, and Washington.

Of the top 20 institutions with the largest numbers of black graduate students, seven are historically black colleges and universities and most are located in the South. Seventeen of the top 20 institutions enrolling Hispanic S&E graduate students are in California, Puerto Rico, Texas, and Florida—all places with high concentrations of Hispanics in their population. Nine of the top 20 academic institutions enrolling Asian S&E graduate students are in California. Eleven of the top 20 institutions enrolling American Indians as graduate students are in California, Arizona, and Oklahoma. (See appendix table 4-7.)

Figure 4-3

Minority S&E graduate students, by race/ethnicity: 1990–99



NOTE: Data are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

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their representation among all U.S. citizen and permanent resident S&E graduate students from 6 percent in 1990 to 9 percent in 1999, blacks from 4 to 7 percent, Hispanics from 3 to 5 percent, and American Indians from 0.4 to 0.5 percent. Concurrently, the percentage of white graduate students declined from 81 to 72 percent. (See appendix table 4-6.)

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[3] Data refer to U.S. citizens and permanent residents only.

Data on the sex of S&E graduate students by race/ethnicity are available only as far back as 1994. For the 5 years for which data are available, the numbers of female S&E graduate students in each racial/ethnic group—except white—increased, as did the numbers of black, Hispanic, and American Indian men. The numbers of white and Asian men in graduate S&E study dropped from 1994 to 1999. (See appendix tables 4-8 and 4-9.)[4]

Graduate Education at Minority-Serving Institutions

Historically black colleges and universities (HBCUs) account for a disproportionate share of black S&E graduate students. HBCUs, although only 4 percent of all academic institutions enrolling S&E graduate students, account for 16 percent of all black graduate students in these fields. (See appendix table 4-10.) These institutions accounted for higher percentages of black enrollment in some fields, notably in the agricultural sciences (56 percent of all black graduate students in this field), biological sciences (25 percent), and mathematics (22 percent), in 1999.

Unlike HBCUs, the institutions classified as Hispanic-serving institutions (HSIs) change from year to year. Among the criteria for inclusion as an HSI, as per the Higher Education Act of 1965 as amended and 20 U.S.C. 1059c, are that the institution have at least 25 percent Hispanic full-time undergraduate enrollment and that at least 50 percent of its Hispanic students be low income. Different institutions fulfill these qualifications in any given year, and an institution that qualified in one year may or may not in a subsequent year. In 1999, 203 institutions met the HSI criteria. These accounted for 6 percent of all academic institutions enrolling S&E graduate students, 29 percent of all Hispanic graduate students in S&E fields, and 41 percent of all Hispanics enrolled in the agricultural sciences. (See appendix table 4-11.) Of these institutions, the University of Puerto Rico–Rio Piedras enrolled the largest number of Hispanic graduate students in S&E in 1999. Florida International and California State–Los Angeles enrolled the largest numbers of Hispanic graduate students in S&E in the 50 states and the District of Columbia. (See appendix table 4-7.)

Tribal colleges offer primarily two-year certificates or degrees. Only two offer graduate programs; neither had graduate students in S&E in 1999.

Minority Enrollment in Texas and California

Results are mixed regarding the effects of changes in legislation or policy on graduate enrollment. In Texas and California, respectively, legislation—i.e., Hopwood v. Texas 78 F.3d 932 (5th Cir. 1996), cert. denied, 116 S. Ct. 2581 (1996)—and state policy—i.e., the Regents of the University of California Policy Ensuring Equal Treatment Admissions (SP-1), approved July 20, 1995—disallowing preferences based on race/ethnicity went into effect in 1997. In Texas, black graduate enrollment in science and engineering was more or less the same in 1999 as it was before the legislation went into effect; Hispanic enrollment decreased 14 percent—the same as white enrollment. In California, Hispanic graduate enrollment in 1999 was higher than in 1996; concurrently, white enrollment dropped 5 percent, and black enrollment dropped 14 percent. (See "Trends in Enrollment of Minorities in California and Texas," NSF/SRS 2000b.)

Students with disabilities

About 3 percent of graduate students studying in all fields reported a disability in 1996. (See appendix table 4-12.) Graduate students with disabilities are older, on average, than those without disabilities. They are more likely than those without disabilities to be female and more likely than those without disabilities to be black or Hispanic. See appendix A for information on all data sources.[5]

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[4] For data on graduate enrollment of minority men and women by detailed fields, see http://www.nsf.gov/sbe/srs/gss/start.htm.

[5] The source of most of the data in this chapter—the National Science Foundation's Survey of Graduate Students and Postdoctorates in Science and Engineering, a survey of U.S. academic institutions with graduate S&E departments—does not collect data on students with disabilities. As noted in previous chapters, data on such individuals do not tend to be included in comprehensive institutional records; and, if they are, such information is likely to be kept confidential and used as a means of providing special services to students. The source of the data reported here is the National Postsecondary Student Aid Study, a sample survey done by the National Center for Education Statistics of individuals in postsecondary educational institutions. The survey defines students with disabilities as those who reported having one or more of the following conditions: a specific learning disability, a visual handicap, hard of hearing, deafness, a speech disability, an orthopedic handicap, or a health impairment.

Fields of study

Women

Women account for more than half of all graduate students in some science fields: in 1999, for example, 72 percent of the graduate students in psychology were female, as were 53 percent in the biological sciences and in the social sciences. (See figure 4-2 and appendix tables 4-1 and 4-2.) Roughly 30 to 40 percent of the graduate students in most other science fields—the physical sciences; the earth, atmospheric, and ocean sciences; mathematics; computer science; and the agricultural sciences—were female. In contrast, women only accounted for 21 percent of all graduate students in engineering.

Minorities

Among U.S. citizens and permanent residents,[6] the field distributions of S&E graduate students for the various racial/ethnic groups are quite different. Larger percentages of black, Hispanic, and American Indian S&E graduate students, as well as of white students, were in the social and behavioral sciences compared to Asian students in 1999. Specifically, more than half of black, Hispanic, and American Indian S&E graduate students and 39 percent of white S&E graduate students were in psychology or the social sciences compared with 20 percent for Asians. On the other hand, larger percentages of Asian S&E graduate students than of other groups were in engineering and computer science. (See figure 4-4.) These differences in field distribution by race/ethnicity hold for both men and women. (See appendix tables 4-8 and 4-9.)

Students with disabilities

There are substantial variations in graduate field choice based on disability status. Smaller percentages of graduate students with disabilities than of those without disabilities were in the life and physical sciences and in engineering, computer science, and mathematics in 1996. Roughly the same proportions of all graduate students with and without disabilities were in the social and behavioral sciences and in many non-S&E fields. On the other hand, a much higher percentage of students with disabilities (29 percent) than of those without (12 percent) were enrolled in graduate health programs. (See figure 4-5 and appendix table 4-13.)

Enrollment status

Women

Female S&E graduate students are about as likely as male to be enrolled full time in graduate school. In 1999, 68 percent of female and 70 percent of male graduate students in S&E were enrolled on a full-time basis. (See appendix table 4-14.)

Minorities

There is relatively little variation by racial/ethnic group[7] in full- versus part-time S&E graduate enrollment. Roughly 65 percent of each racial/ethnic group was enrolled full time; the single exception to this was black students, 55 percent of whom were enrolled full time. (See appendix table 4-15.)

Students with disabilities

Students with disabilities, across all fields of graduate study, are about as likely to be enrolled full time as those without disabilities. In 1996, 34 percent of students with disabilities and 33 percent of those without were enrolled full time in graduate and first-professional programs.[8] (See appendix table 4-12.)

Sources of Financial Support

Women

Institutional support was the most prevalent primary source of support for both men and women enrolled as full-time graduate students in science and engineering: 43 percent of men and 44 percent of women relied primarily on such support to finance their graduate education. Women are more likely than men to rely primarily on self-support: in 1999, 33 percent of women compared to 25 percent of men relied primarily on self-support to finance their graduate education. Federal support, on the other hand, was more likely to be the primary source of support for men than for women: 22 percent of men and 17 percent of women primarily financed their graduate education in this way.[9] (See appendix table 4-16.)

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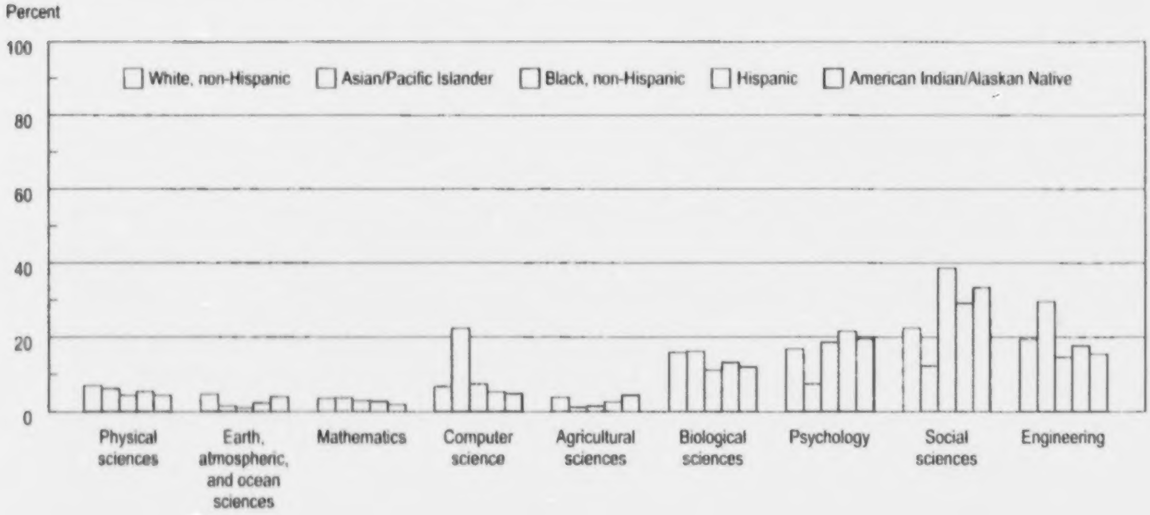
[6] Data refer to U.S. citizens and permanent residents only.

[7] Data refer to U.S. citizens and permanent residents only.

[8] First-professional programs include chiropractic medicine, dentistry, medicine, optometry, osteopathic medicine, pharmacy, podiatry, and veterinary medicine.

[9] Federal support may be directly provided to the student through fellowships or traineeships or indirectly provided through research assistantships.

Figure 4-4
Field distribution of S&E graduate students, by race/ethnicity: 1999

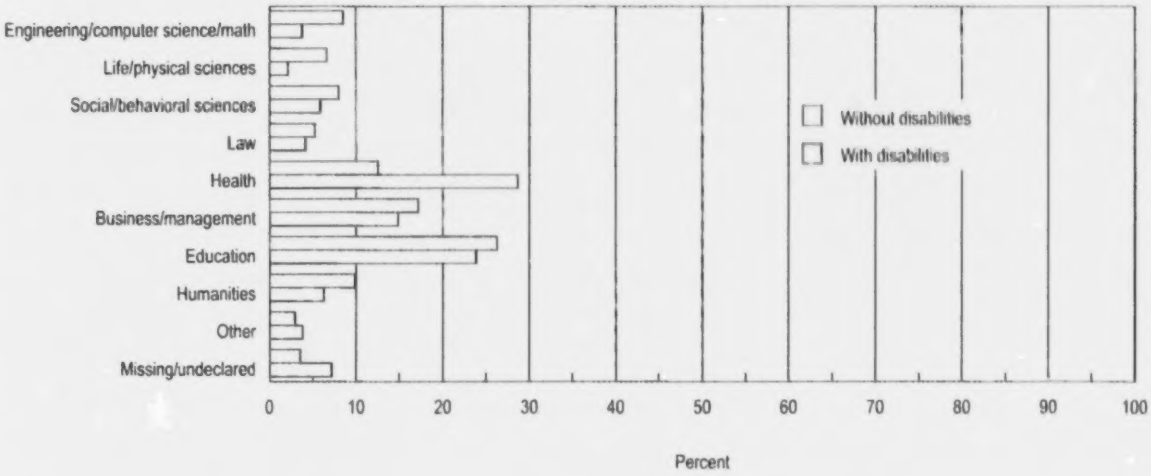


NOTE: Data are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Figure 4-5
Field distribution of graduate students, by disability status: 1996



SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

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Primary source of support varies greatly by field. For example, only 5 percent of graduate students in the physical sciences relied primarily on self-support, compared to 48 percent of those in psychology, 47 percent of those in computer science, and 40 percent of those in the social sciences. The percentages of graduate students funded primarily by Federal sources ranged from 6 percent in the social sciences to 35 percent in the physical and biological sciences. Reliance on institutional support ranged from 31 percent in computer science to 70 percent in mathematics.

Differences in field account for some of the differences between men and women in their respective sources of support. Thus, within engineering, the primary sources of financial support for male and female graduate students were quite similar: 25 percent of men and 26 percent of women relied primarily on self-support, 24 percent of men and 22 percent of women relied on Federal support, and 36 percent of men and 40 percent of women relied on institutional support. In the sciences, female graduate students were more likely than male to be self-supported (34 versus 25 percent), and they were less likely than males to have Federal support (17 versus 22 percent). As noted earlier, women account for more than half of the graduate students in psychology and the social sciences, fields in which large percentages of students rely primarily on self-support and small percentages of students rely primarily on Federal support. Within science fields, the differences between male and female graduate students in source of support were generally smaller. In each broad science field, however, a lower percentage of female full-time graduate students than male had Federal support, and a higher percentage relied primarily on self-support.

Minorities

Among U.S. citizen and permanent resident S&E graduate students enrolled full time for the full year, a smaller proportion of Asians (21 percent) received loans than of whites (36 percent) or of underrepresented minorities—i.e., blacks, Hispanics, and American Indians (43 percent). On the other hand, larger percentages of Asians than of other groups received research assistantships and teaching assistantships. (See appendix table 4-17.) A larger share of underrepresented minorities than of whites or Asians received grants. These differences may be due—at least in part—to variations in field as well as eligibility for various types of aid. For example, Asians who entered graduate school as students initially on temporary visas may not have been eligible for many Federal loan programs, but would have been eligible for research assistantships.

Students with disabilities

Although the National Center for Education Statistics, through its National Postsecondary Student Aid Study, collects data on disability status and provides information on field and enrollment status, the number of graduate students with disabilities in the study's sample is too small to generate reliable data on financial support for those in S&E programs.

Debt at graduation

At the time of doctoral degree conferral, differences exist between men and women, the various racial/ethnic groups, and graduates with and without disabilities in terms of their respective financial indebtedness.[10] Many of these differences are due to variations in field of degree. Psychology doctorate recipients, for example, are much more likely to have debt and report higher levels of debt than those with degrees in other S&E fields (NSF/SRS 2000). Psychology awards more than twice as many doctorates to women as to men and awards larger shares to blacks and Hispanics than does any other broad field.

Women

Overall, 39 percent of U.S. citizens receiving S&E doctorates between 1995 and 1999 reported no accumulated debt at the time of their doctoral degree award. A smaller percentage of women than of men reported not having any debt at all—37 versus 40 percent—and a larger percentage of women than of men reported having more than $30,000 in debt—13 versus 10 percent. (See appendix table 4-18.) Most of the overall difference in debt, as noted above, is field-related. Female S&E graduate students are far more likely than men to be in psychology departments, and psychology graduate students are far more likely to report debt than their peers in other S&E fields. Within most S&E fields, men are less likely to have no debt than women. In all fields except computer science and the social sciences, men are more likely than women to report debt over $30,000.

Minorities

Similarly, smaller percentages of blacks, Hispanics, and American Indians than of whites or Asians were debt free, and larger percentages reported debt over $30,000. Asians were the most likely of any racial/ethnic group to report no debt at all. These differences hold across most broad fields of S&E. Within most broad fields, black and Hispanic graduate students were less likely than whites and Asians to report no debt and more likely than other groups to report debt over $30,000. (See appendix table 4-19.)

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[10] Student debt covers expenses incurred during undergraduate and/or graduate education for tuition, fees, living expenses, supplies, and transportation.

Students with disabilities

Recipients of S&E doctoral degrees in 1995–99 who had disabilities were more likely than those without to report high levels of debt: 19 percent of those with disabilities and 11 percent of those without disabilities had debt over $30,000 at the time they graduated. Disaggregating by field does not eliminate these differences—within each broad S&E field, students with disabilities were more likely than those without to report more than $30,000 of debt. (See appendix table 4-20.)

Attrition

Factors related to persistence in or attrition from graduate study include integration into the "social and intellectual life of the institution" (Tinto 1993), relationships with faculty advisors (Golde 2000), and the type of financial support received. These factors are interrelated: both those who receive no support and those who receive full fellowships are less likely to be integrated into the department's social and intellectual life and are most likely to withdraw (Lovitts and Nelson 2000).

Women and men drop out of S&E graduate programs at approximately the same rates. Among those who enrolled in S&E master's or doctoral programs after completing a baccalaureate in the 1992/93 academic year, about 30 percent of both men and women were no longer enrolled and had not attained any higher degree by 1997. (See appendix table 4-21.) During that time period, similar percentages of men and women (41 and 44 percent, respectively) had completed a higher degree.

The differences between underrepresented minorities on the one hand and Asians and whites on the other in terms of percentages of students who were no longer enrolled and had not attained any higher degree are not statistically significant.

Students with disabilities are more likely than those without to drop out of graduate S&E programs. Among those who enrolled in S&E master's or doctoral programs after completing a baccalaureate in 1992/93, 58 percent of students with disabilities and 29 percent of those without were no longer enrolled and had not attained any higher degree by 1997. (See appendix table 4-21.)

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Chapter 5

Graduate Degrees

Trends for women and minorities in attainment of master's and doctoral degrees are similar to those for their bachelor's degree attainment and their graduate enrollment: both the numbers and percentages of women and minorities earning graduate degrees in science and engineering have increased over time.

Master's degrees

The number of master's degrees awarded in science and engineering increased 21 percent from 1990 to 1998, rising from 77,788 to 93,918. (See appendix table 5-1.) Concurrently, the number of master's degrees in non-S&E fields increased 37 percent from 247,159 to 337,953.

Women

In S&E fields, both the number of women earning master's degrees and their representation among all students earning master's degrees rose steadily during the 1990s. At the beginning of the decade, women earned 26,558, or 34 percent, of all S&E master's degrees; by 1998, they earned 38,583, or 41 percent. (See appendix table 5-2.) The number of S&E master's degrees earned by men also increased over this time, rising from 51,230 in 1990 to 55,335 in 1998; this growth, however, occurred at a much slower rate than that for women. (See figure 5-1.)

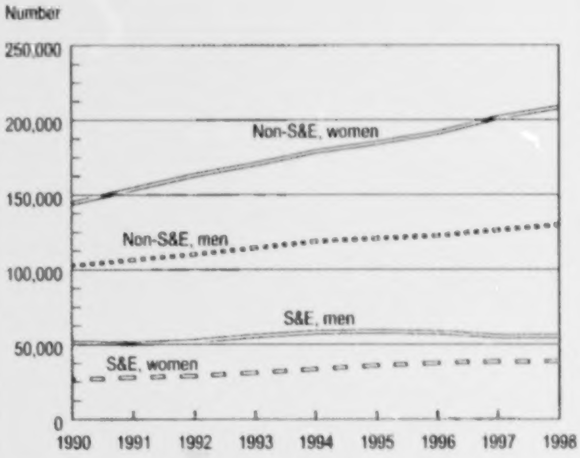
Women earn a smaller percentage of the master's degrees than they do of the bachelor's degrees awarded in science and engineering. In 1998, women earned 41 percent of the master's degrees and 49 percent of the bachelor's degrees awarded in S&E fields. (See appendix tables 5-2 and 3-4.) In non-S&E fields, on the other hand, women earn about the same proportion of master's degrees as of bachelor's degrees, receiving 62 percent of the master's degrees and 60 percent of the bachelor's degrees awarded in non-S&E fields in 1998.

Women's share of S&E master's degrees varies by field. In 1998, women earned their highest shares of S&E master's degrees in psychology (73 percent), the social sciences (51 percent), and the biological sciences (53 percent); they received their lowest share in engineering (20 percent). (See appendix table 5-2.) The number and percentage of master's degrees awarded to women in all major S&E fields except mathematics have increased since 1990.

Women are more likely than men to expect to end their S&E graduate education at the master's degree level and are consequently less likely than men to expect to earn doctoral degrees. Among graduate S&E students in the 1995/96 academic year, 72 percent of females and 58 percent of males reported that they expected to earn a master's degree as their highest degree; 28 percent of female and 42 percent of male graduate students expected to earn a doctoral degree. (See text table 5-1.)

Figure 5-1

Master's degrees awarded in S&E and non-S&E fields, by sex: 1990–98



SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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Text table 5-1

Highest degree expected by S&E graduate students, by sex and race/ethnicity: 1996

Sex and race/ethnicity	Master's degree	Doctoral degree
All graduate students	63.9	36.1
Male	58.1	41.9
Female	72.0	28.0
White, non-Hispanic	63.1	36.9
Asian/Pacific Islander	64.3	35.7
Underrepresented minority[a]	68.9	31.1

[a] Includes black, non-Hispanic; Hispanic; and American Indian/Alaskan Native.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

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Minorities

The number of S&E master's degrees awarded increased for all racial/ethnic groups—except white men—during the 1990s.[1] The percentages of master's degrees earned by Asians, blacks, Hispanics, and American Indians also increased from 1990 to 1998. (See figure 5-2.)

In 1998, 379,666 master's degrees were awarded to U.S. citizens and permanent residents; of these, 65,748—17 percent—were in S&E. (See appendix table 5-3.) Asians earned a higher percentage of their total master's degrees in S&E than did other racial/ethnic groups: almost one-third (31 percent) of all master's degrees awarded to Asians in 1998 were in S&E fields. In contrast, 18 percent of all master's degrees awarded to Hispanics and American Indians, 17 percent to whites, and 13 percent to blacks were in S&E fields. (See text table 5-2.)

The percentage of graduate students in S&E expecting to end their graduate education with a master's degree does not differ much by race/ethnicity—63 percent of white,

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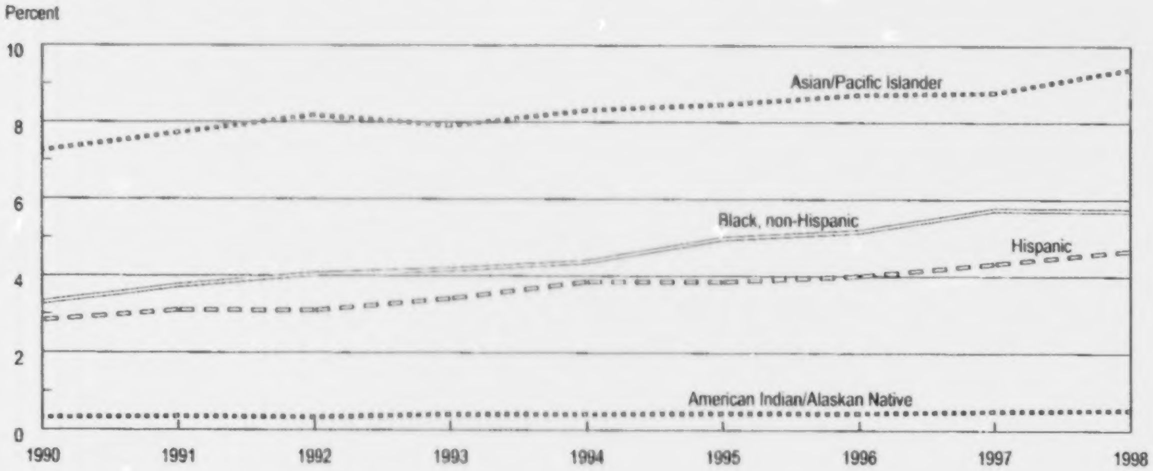
[1] Data in this section refer to U.S. citizens and permanent residents only.

Figure 5-2

Percentage of all S&E master's degrees earned by minority groups: 1990–98



NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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Text table 5-2

S&E and non-S&E master's degrees awarded to U.S. citizens and permanent residents, by race/ethnicity: 1998

Race/ethnicity	Number of master's degrees			Percent awarded in S&E
	Total	Non-S&E	S&E	
Total	379,666	313,918	65,748	17.3
White, non-Hispanic	291,962	242,915	49,047	16.8
Asian/Pacific Islander	19,936	13,758	6,178	31.0
Black, non-Hispanic	28,616	24,860	3,756	13.1
Hispanic	17,416	14,345	3,071	17.6
American Indian/Alaskan Native	1,951	1,602	349	17.9

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

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64 percent of Asian, and 69 percent of underrepresented minority (i.e., combined black, non-Hispanic; Hispanic; and American Indian) graduate students in the 1995/96 academic year expected their highest degree earned to be a master's degree. (See text table 5-1.)

Asians

Asians earned 6,178 master's degrees in S&E in 1998, up from 4,055 in 1990. By 1998, Asians accounted for 9 percent of all S&E master's degrees awarded to U.S. citizens and permanent residents, up from 7 percent in 1990. (See appendix table 5-3.) In contrast, they earned 4 percent of the master's degrees awarded in 1998 in non-S&E fields.

Asians earned an increasing percentage of the master's degrees in each major S&E field from 1990 to 1998. The increases were particularly large in computer science, where they earned 13 percent of the master's degrees in 1990 and 23 percent in 1998. Computer science and engineering together accounted for 64 percent of the S&E master's degrees earned by Asians. These two fields accounted for just 36 percent of the S&E master's degrees awarded to U.S. citizens and permanent residents of all racial/ethnic groups combined.

Blacks

Blacks earned 3,756 S&E master's degrees in 1998, or 6 percent of the total; this was up from 1,847 (3 percent) in 1990. (See appendix table 5-3.) They earned 8 percent of the master's degrees in non-S&E fields.

The percentage of master's degrees earned by blacks in each of the major S&E fields increased between 1990 and 1998. In some fields, the numbers more than doubled and the percentages increased considerably over the period. For example, the number of master's degrees awarded to blacks in mathematics rose from 70 to 150 between 1990 and 1998; in the agricultural sciences, this increase was from 28 to 95; in the social sciences, from 462 to 1,012; and in psychology, from 471 to 1,073. The social sciences and psychology together accounted for 56 percent of the S&E master's degrees earned by blacks in 1998. In comparison, 41 percent of the S&E master's degrees earned by all U.S. citizens and permanent residents were in these fields.

Hispanics

Trends in master's degrees earned by Hispanics were similar to those for blacks. Hispanics earned 3,071 S&E master's degrees in 1998, or 5 percent of the total earned by all U.S. citizens and permanent residents. (See appendix table 5-3.) This was an increase from the 1,587 master's degrees (3 percent of total) earned by Hispanics in 1990. Hispanics earned 5 percent of the master's degrees awarded in non-S&E fields in 1998.

The percentage of master's degrees earned by Hispanics in each of the major S&E fields increased between 1990 and 1998. As with blacks, the numbers of master's degrees earned by Hispanics more than doubled in some fields over the period. In the agricultural sciences, the number of master's degrees earned by Hispanics rose from 44 in 1990 to 116 in

1998; in psychology, the increase was from 369 to 851. Also, as was the case for blacks and American Indians (see below), the social sciences and psychology are the most prevalent degree fields for this group: Hispanics earned half of their S&E master's degrees in these two fields in 1998.

American Indians

American Indians earned 349 master's degrees in S&E in 1998, up from 181 in 1990. (See appendix table 5-3.) The overall proportion of S&E master's degrees earned by American Indians increased from 0.3 percent in 1990 to 0.5 percent in 1998. American Indians also earned 0.5 percent of all non-S&E master's degrees awarded in 1998.

More than half (58 percent) of the S&E master's degrees earned by American Indians in 1998 were in the social sciences and psychology, compared with 41 percent of the S&E master's degrees earned by all U.S. citizens and permanent residents.

Minority women

Disaggregating S&E master's degree awards by sex and race/ethnicity reveals that the numbers awarded to women and to men in each racial/ethnic group increased over the 1990–98 period with a single exception—awards made to white men. (See appendix tables 5-4 and 5-5.) Among Asian, black, and Hispanic men and women, the increases occurred in all major S&E fields. The numbers of master's degrees in computer science and mathematics dropped for white men and women; the numbers of master's degrees in engineering and the physical sciences dropped for white men.

Women earned 40 percent of all S&E master's degrees awarded in 1998 and 43 percent of those awarded to U.S. citizens and permanent residents. Among blacks, women earned 56 percent of the master's degrees awarded in S&E to U.S. citizens and permanent residents. Among American Indians, women earned 50 percent of the S&E master's degrees. Within each of the other racial/ethnic groups, women earned less than half of the S&E master's degrees awarded: Hispanic women earned 48 percent, white women earned 43 percent, and Asian women earned 40 percent of the master's degrees awarded to their respective racial/ethnic group. Women of "other" race/ethnicity earned 41 percent of the master's degrees in that racial/ethnic group. (See figure 5-3.)

Students with disabilities

The Federal Government does not collect data on master's degrees awarded to persons with disabilities. The National Science Foundation does not collect data on master's degrees; the National Center for Education Statistics—although it does collect data on master's degrees from colleges and universities—does not ask for the number of degrees earned by students with disabilities. As noted in the previous chapter, data on individuals' disabilities are usually not included in comprehensive institutional student records. Therefore, enrollment and degree data collected from colleges and universities are not reported by disability status.

Doctorates

Doctoral degrees in S&E accounted for 63 percent of all research doctoral degrees awarded in 1999. The number of doctoral degrees awarded in S&E rose from 22,868 to 27,309 between 1990 and 1998, but dropped to 25,953 in 1999—the first drop since 1980.[2] (See appendix table 5-6.)

Women

Both the number of women earning doctoral degrees in, and their percentage of the total awards in, S&E rose steadily through 1998. At the beginning of the decade, women earned 6,370, or 28 percent, of all S&E doctoral

Doctoral Degree Awards to Women in Selected Countries

Among countries with available data on doctoral degrees by field and sex, Italy, Spain, and France had the highest percentages of doctoral degrees awarded to women in science (excluding the social and behavioral sciences) in 1998. These percentages were, respectively, 68, 44, and 41, compared with about 33 percent in the United States. In many countries, women earned approximately one-fourth to one-third of the science doctorates. Italy had the highest proportion of doctoral degrees in engineering that were earned by women—35 percent, compared to 13 percent in the United States. Among the countries with available data, the United States awards, by far, the largest number of doctorates in the social and behavioral sciences (more than 7,700 in 1998) and the largest percentage of those doctorates earned by women (54 percent). Most other countries with comparable data reported awarding fewer than 300 total doctorates in the social and behavioral sciences in 1998, with between 19 and 52 percent of those doctorates earned by women. (See text table 5-3.)

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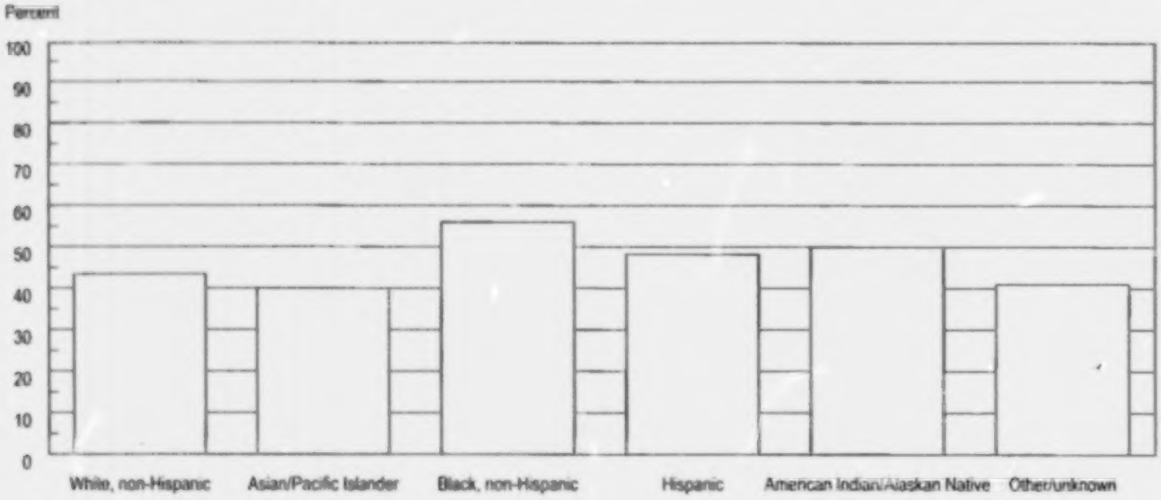
[2] See NSF (2001a) for data on doctoral degrees prior to 1990.

Figure 5-3

Percentage of S&E master's degrees earned by women, by race/ethnicity: 1998



NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

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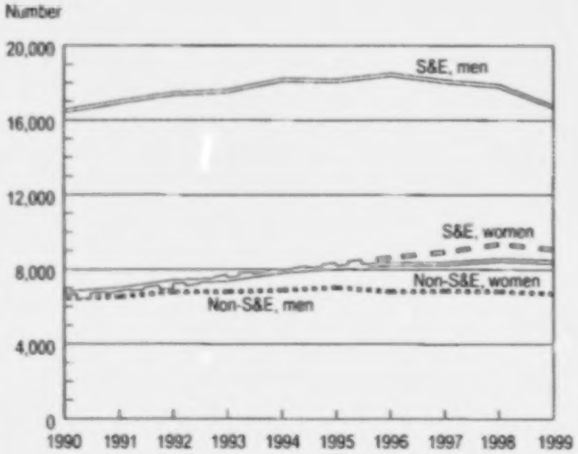
degrees awarded in the United States. (See appendix table 5-7.) By 1999, they earned 9,084, or 35 percent. The number of women, as well as of men, earning S&E doctoral degrees dropped between 1998 and 1999. (See appendix table 5-8 and figure 5-4.)

Women earn a smaller proportion of the doctoral degrees in S&E than they do in non-S&E fields. In 1999, women earned 8,409, or 55 percent, of the doctorates awarded in non-S&E fields. (See appendix table 5-7.) More specifically, they earned 64 percent of the doctorates awarded in the health fields and education.

By broad S&E field, women earned relatively high percentages of the doctoral degrees in psychology (67 percent), the biological sciences (43 percent), and the social sciences (42 percent); they earned lower percentages of the doctoral degrees in the physical sciences (23 percent), mathematics and computer science (22 percent), and engineering (15 percent) in 1999. (See appendix table 5-7.) The proportion of doctoral degrees earned by women in each of the major S&E fields and in all of the more detailed fields (e.g., chemical engineering, astronomy, oceanography, economics) increased between 1990 and 1999.

Figure 5-4

Doctoral degrees awarded in S&E and non-S&E fields, by sex: 1990–99



SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

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Text table 5-3

Percentage of doctoral degrees earned by women, by country and field: 1998

Country	All fields	Sciences						Engineering	Social and behavioral sciences
		All sciences	Life sciences	Physical sciences	Mathematics and statistics	Computing			
Australia	37.0	30.2	36.7	24.0	23.2	16.0		12.7	42.3
Canada	28.7	20.7	30.0	18.0	15.6	11.8		9.6	52.0
France	38.9	41.3	na	na	na	na		21.8	na
Germany	33.1	26.2	46.4	19.8	22.1	14.2		8.2	34.4
Italy	45.2	67.7	54.5	na	68.1	na		35.1	50.6
Japan	16.8	11.0	na	na	na	na		5.4	na
Mexico	38.8	37.9	na	na	na	na		23.3	na
Netherlands	27.4	23.7	na	na	23.7	na		10.0	40.5
South Korea	19.8	22.7	23.1	16.8	38.0	24.2		12.4	19.4
Spain	42.0	43.9	52.5	40.5	41.8	23.0		18.8	49.3
Sweden	32.1	25.3	29.1	na	16.7	na		21.6	32.1
Switzerland	30.0	25.3	40.9	14.8	14.5	16.7		9.0	36.2
Turkey	34.2	34.2	52.9	31.8	27.1	20.0		30.2	36.2
United Kingdom	34.1	33.0	46.9	27.1	19.3	19.3		16.3	na
United States	41.8	32.6	41.2	24.7	25.2	17.2		13.0	53.5

na not available

SOURCE: Organisation for Economic Co-operation and Development, *Education at a Glance* (Paris, 2000).

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Baccalaureate-Origin Institutions for Female Recipients of S&E Doctorates

Female S&E doctorate recipients were less likely than males to have earned their bachelor's degree at a research university and more likely to have earned it at a baccalaureate college.* (See appendix table 5-9.) All of the top 50 baccalaureate-origin institutions for men and 43 of those for women were research institutions. Notably, 5 of the top 50 baccalaureate-origin institutions for women were liberal arts colleges; four of these five were predominantly women's colleges (Wellesley, Smith, Mount Holyoke, and Bryn Mawr). None of the top 50 baccalaureate-origin institutions for men was a liberal arts college.

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*These categorizations refer to the Carnegie classification of colleges and universities, which groups institutions into clusters with similar missions and by the highest level of degree conferred. The 1994 Carnegie classification system comprises the following categories: research universities I and II, doctoral universities I and II, master's (comprehensive) colleges and universities I and II, baccalaureate (liberal arts) colleges I and II, associates of arts colleges, and specialized institutions (Carnegie Foundation for the Advancement of Teaching 1994).

Minorities

U.S. citizens constituted 61 percent, non-U.S. citizens with temporary visas constituted 28 percent, and non-U.S. citizens with permanent residency constituted 6 percent of S&E doctorate recipients in 1999 (NSF/SRS 2001b). Across all racial/ethnic groups, U.S. citizens were less likely to earn their doctorates in an S&E field than were foreign citizens (either permanent U.S. residents or students on temporary visas). Asians, whether U.S. or non-U.S. citizens, were the most likely of all groups to have earned their doctorate in an S&E field.

Higher percentages of Asian and Hispanic S&E doctorate recipients than of other racial/ethnic groups were foreign citizens. Foreign citizen Asians constituted 84 percent of all Asian S&E doctorate recipients,[3] and foreign citizen Hispanics constituted 46 percent of all Hispanic S&E doctorate recipients in 1999. (See appendix table 5-10.)

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[3] More than half (54 percent) of these individuals were from China, Taiwan, and Hong Kong. Another 15 percent were from India; 13 percent were from South Korea.

Of the 17,428 doctorates in S&E earned by U.S. citizens and permanent residents in 1999,[4] 78 percent were earned by whites, 11 percent by Asians, 4 percent by Hispanics, 4 percent by blacks, and 0.7 percent by American Indians. (See appendix table 5-11.) The numbers of S&E doctoral degrees awarded to Asians, blacks, Hispanics, and American Indians who were U.S. citizens or permanent residents rose between 1990 and 1999. (See appendix table 5-11 and figure 5-5.) The number of doctoral degrees awarded in S&E to whites remained relatively constant, fluctuating only slightly between 13,000 and 14,000 over the 1990–99 period.

Of all doctorates earned by Asians who were U.S. citizens or permanent residents in 1999, more than three-fourths (77 percent) were in S&E. In contrast, whites, Hispanics, and American Indians earned between 53 and 58 percent of their doctorates in S&E. Blacks, at 41 percent, were the least likely of all racial/ethnic groups to have earned their doctorate in an S&E field. (See figure 5-6.) Among Hispanic subgroups, Mexican Americans earned 47 percent of their doctorates in S&E fields, Puerto Ricans 56 percent, and other Hispanics 59 percent

Asians

Asians earned 11 percent of the S&E doctorates awarded to U.S. citizens and permanent residents in 1999; this was up from 7 percent in 1990. (See appendix table 5-11.) In 1999, Asians earned only 5 percent of the doctorates awarded in non-S&E fields.

The number of doctoral degrees in S&E earned by U.S. citizen or permanent resident Asians spiked in 1994 and 1995 as a result of changes in U.S. immigration policy. Although the numbers of these doctorate-holders dropped from 1996 through 1999, they were still well above the 1993 total. The increase was caused by the Chinese Student Protection Act of 1992, which made thousands of students from the People's Republic of China who were enrolled in U.S. universities in 1990 at the time of the Tiananmen incident eligible to apply for permanent residency in 1993. The number of these students who had permanent visas at the

Baccalaureate-Origin Institutions for Minority Recipients of S&E Doctorates

Minority-serving institutions play an important role in educating minority group members who go on to earn doctorates in S&E. Historically black colleges and universities (HBCUs) were the baccalaureate-origin institutions of one-fourth of the 1995–99 black recipients of S&E doctorates. (See figure 5-7 and appendix table 5-12.) Twenty-five percent of the top 52 baccalaureate-origin institutions of 1995–99 Hispanic S&E doctorate recipients were Hispanic-serving institutions in 1999. Because only two tribal colleges or universities award bachelor's degrees in S&E, tribal colleges are not a major source of American Indian S&E doctorates.

Minority-serving institutions tend to be bachelor's or master's degree-granting institutions rather than doctorate-granting institutions. Among 1995–99 recipients of S&E doctorates, 42 percent of the baccalaureate-origin institutions of black S&E doctorate recipients, and 19 percent of those of American Indian and Hispanic S&E doctorate recipients, were bachelor's or master's degree-granting institutions. (See appendix tables 5-12, 5-13, and 5-14.) In contrast, only one of the top baccalaureate-origin institutions of Asian S&E doctorate recipients was not also a doctorate-granting institution. (See appendix table 5-15.) Two bachelor's degree-granting HBCUs are notable as baccalaureate-origin institutions—Morehouse, a college for men, is the baccalaureate-origin institution of the largest number of black male S&E doctorates; and Spelman, a college for women, is among the top baccalaureate-origin institutions for black female S&E doctorates.

The baccalaureate-origin institutions of Hispanic, American Indian, and Asian doctorate recipients reflect, to some degree, the geographic concentration of their local populations. More than half of the top 52 baccalaureate-origin institutions of Hispanic doctorate recipients are in Puerto Rico, California, Florida, and Texas. (See appendix table 5-13.) Puerto Rican doctorate recipients primarily attended baccalaureate institutions in Puerto Rico, and Mexican American doctorate recipients primarily attended baccalaureate institutions in the West and Southwest (Quintana-Baker 2000). Twelve of the 37 institutions that were baccalaureate-origin institutions for three or more American Indian doctorate recipients in 1995–99 are in California (seven) and Oklahoma (five). (See appendix table 5-14.) Eleven of the top 51 baccalaureate-origin institutions of Asian doctorate recipients are in California. (See appendix table 5-15.)

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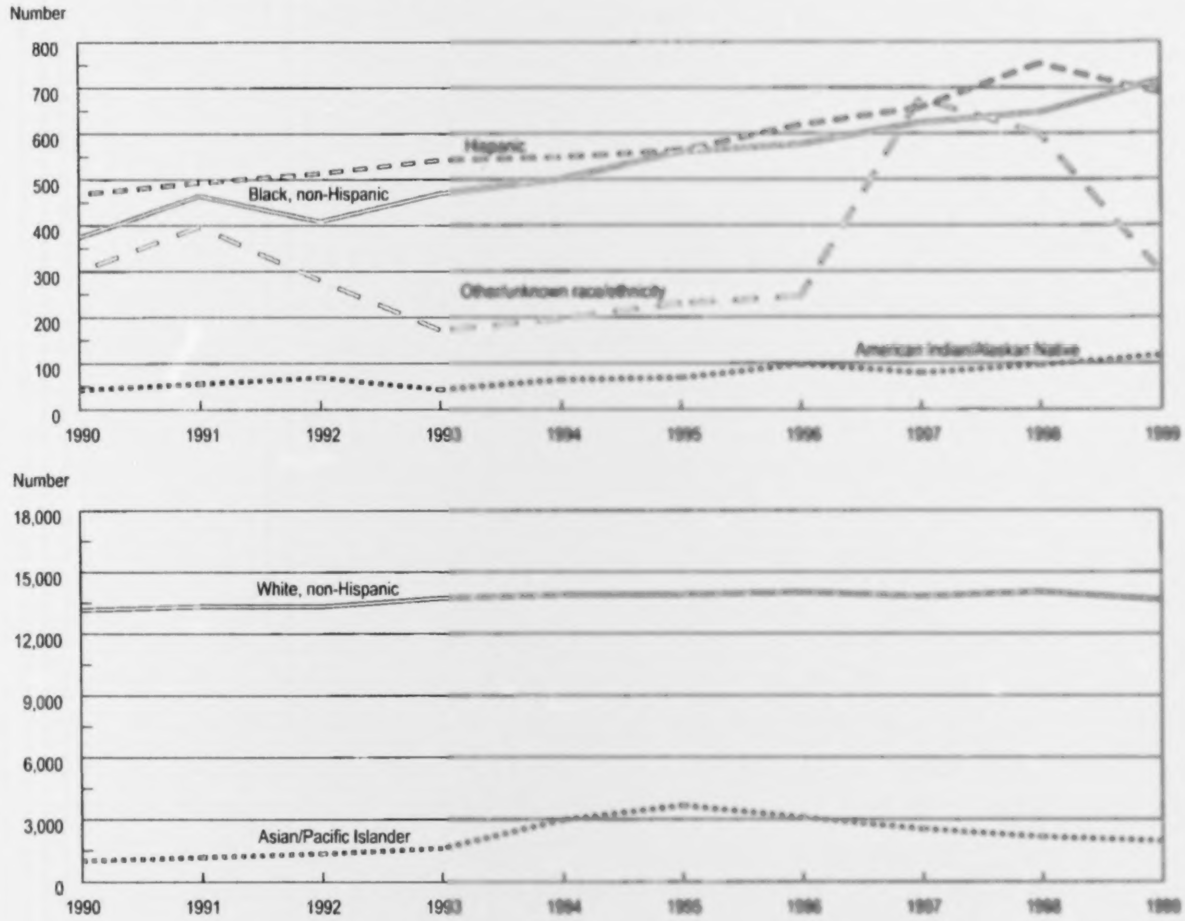
[4] The data in the remainder of this section refer to U.S. citizens and permanent residents only. Permanent residents are included with U.S. citizens because almost all (94 percent) doctorate recipients in 1999 with permanent residency intended to remain in the United States. Approximately one-fourth of those with temporary visas intended to leave the United States.

Figure 5-5

Doctoral degrees in S&E, by race/ethnicity: 1990–99



NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

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time of S&E doctorate conferral rose from 162 (or 8 percent of all S&E doctoral recipients from China) in 1992 to 2,169 (79 percent) in 1995. The percentage of doctorate recipients holding permanent visas dropped in 1998 and 1999 as the number of remaining students who had switched to permanent residency under the act declined.

Asians constituted 18 percent of both engineering and computer science, and 15 percent of biological science, doctorate recipients in 1999. They received relatively small proportions of the doctorates awarded in psychology (4 percent) and the social sciences (7 percent). (See appendix table 5-11.)

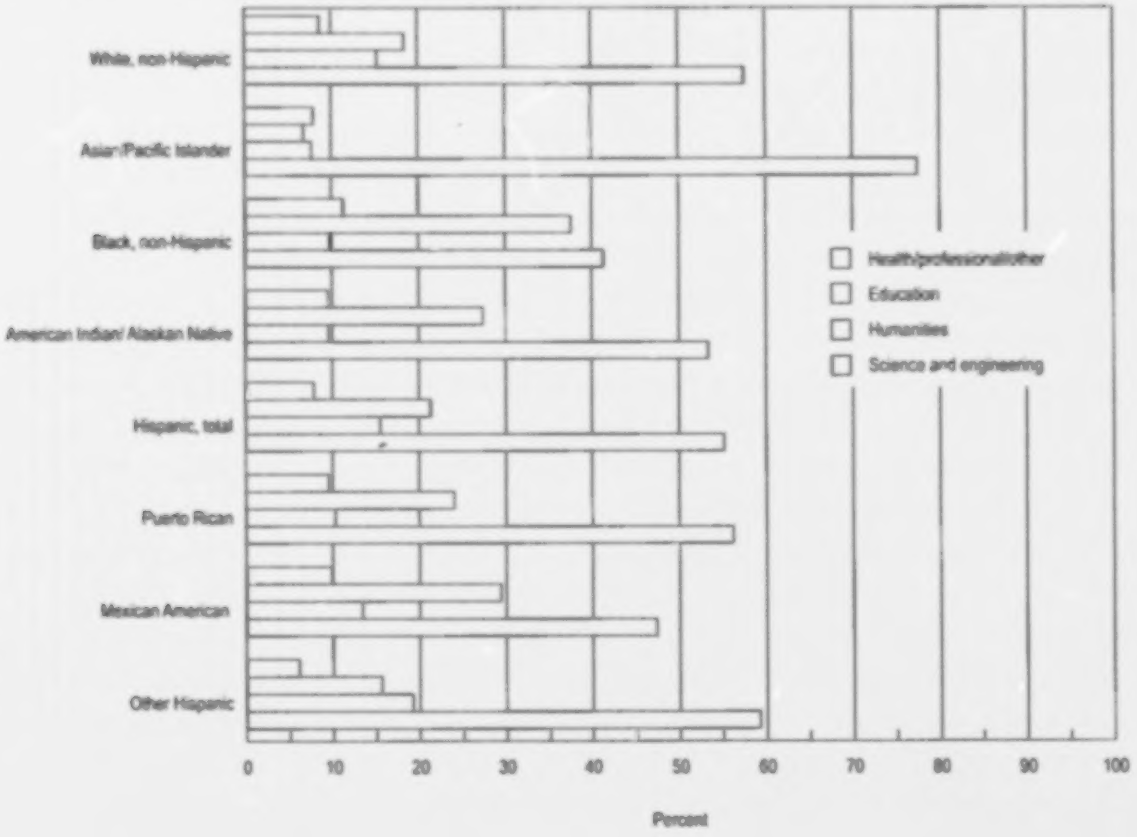
Blacks

Unlike other racial/ethnic groups, blacks earned more than half of their doctorates in non-S&E fields, primarily in education. Thirty-eight percent of the doctorates earned by blacks in 1999 were in education, compared with 19 percent earned by all U.S. citizens and permanent residents. (See figure 5-6.) In contrast, while 77 percent of the doctorates earned by Asians were in S&E, only 7 percent of Asian Ph.D. degrees were awarded in education in 1999.

The number of S&E doctorates awarded to blacks rose in the 1990s, reaching 715 in 1999. (See appendix table 5-11.) Blacks accounted for 4 percent of all S&E doctorate

Figure 5-6

Percentage of doctoral degrees awarded in S&E and non-S&E fields, by race/ethnicity: 1999



NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

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recipients in that year, up from 2 percent in 1990. They received 8 percent of the doctorates awarded in non-S&E fields in 1999.

More than half (52 percent) of the S&E doctorates earned by blacks in 1999 were in psychology and the social sciences, compared with 35 percent of those earned by all U.S. citizens and permanent residents. (See appendix table 5-11.)

Hispanics

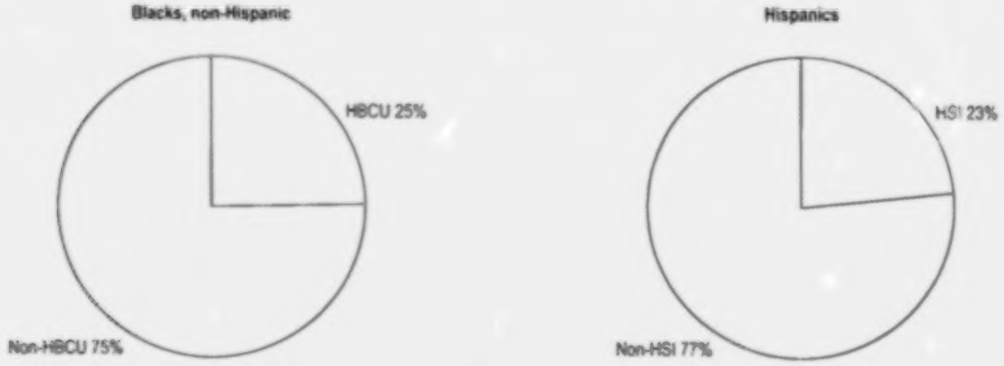
Hispanics earned 468 of the S&E doctoral degrees awarded in 1990 and 688 of those awarded in 1999. (See appendix table 5-11.) They comprised 4 percent of the S&E doctorate recipients in 1999, up from 3 percent in 1990. Hispanics also accounted for 4 percent of the doctorate recipients in non-S&E fields in 1999.

About one-fourth (24 percent) of the S&E doctorates earned by Hispanics in 1999 were awarded to Puerto Ricans; approximately another fourth (24 percent) went to Mexican Americans. (See appendix table 5-11.)

Fifty-five percent of all doctorates earned by Hispanics in 1999 were in S&E fields. Twenty-nine percent of the S&E doctorates earned by Hispanics were in psychology; in contrast, 19 percent of the S&E doctorates earned by all U.S. citizens and permanent residents were in this field.

Figure 5-7

Percentages of doctoral degrees awarded in S&E to blacks and to Hispanics, by type of baccalaureate-origin institution: 1995–99



HBCU historically black college/university
HSI Hispanic-serving institution

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

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How Consistent Is Reporting of Race/Ethnicity Data for Doctoral Recipients?

A study comparing data on race/ethnicity of doctoral degree recipients from the University of California student records and data on the same individuals from the National Science Foundation's Survey of Earned Doctorates (SED) found variation in the degree of consistency between the two sets of records. Data from the two sources showed the highest rate of correspondence for whites and Asians: 99 percent of the racial/ethnic codes in the two surveys matched (Sui 2000). Hispanics and blacks had slightly lower rates of correspondence (97 and 96 percent, respectively), and American Indians had the lowest rate of correspondence—81 percent. In a more narrow comparison of SED data with data from the University of California–Berkeley (UCB), student records again showed relatively low congruence between the two data sources for American Indians. A check of 10 of the mismatches for American Indians showed that one mistake was a data entry error; and that two students were from China and may have misunderstood the term, one was from Pakistan and may have confused the term with "Indian American," and six reported that they were white in the SED and Native American in the UCB data set. These last could have misunderstood the term "Native American" (the term used in the UCB survey) to refer to those born in the United States.

American Indians

The number of S&E doctorates earned by American Indians more than doubled between 1990 and 1999, rising from 43 to 117. (See appendix table 5-11.) American Indians earned 0.7 percent of the S&E doctorates awarded to U.S. citizens and permanent residents in 1999, up from 0.3 percent in 1990. They earned 0.8 percent of non-S&E doctorates in 1999.

Fifty-six percent of the S&E doctorates earned by American Indians in 1999 were in psychology and the social sciences, compared with 35 percent of those earned by all U.S. citizens and permanent residents.

Minority men and women

As with master's degrees, the numbers of doctoral degrees in S&E awarded to men and women of all racial/ethnic groups increased from 1990 to 1999, with the single exception of white men. (See appendix table 5-16.) The numbers of doctorates granted to women more than doubled in some racial/ethnic groups, increasing from 252 to 728 for Asian women, 149 to 366 for black women, 178 to 344 for Hispanic women, 18 to 56 for American Indian women, and 4,522 to 5,421 for white women from 1990 to 1999.

The percentages of doctoral degrees granted in S&E to women in each racial/ethnic group also increased over the period. Asian, black, Hispanic, and American Indian women together accounted for less than 4 percent of U.S. citizen and permanent resident doctorate recipients in 1990. By 1999, Asian women alone received 4 percent, black women 2 percent, Hispanic women 2 percent, and American Indian women 0.3 percent of S&E doctoral degrees.

In 1999, black women earned more than half, and Hispanic women earned half, of the S&E doctorates awarded to their respective racial/ethnic groups. Women earned 48 percent of the S&E doctorates among American Indians, 40 percent among whites, and 37 percent among Asians. Among Hispanics, women earned 52 percent of the S&E doctorates awarded to both Puerto Ricans and other Hispanics and 45 percent of the doctorates awarded to Mexican Americans. (See appendix table 5-16.)

The field distributions of female S&E doctorate recipients were similar among minorities, with the exception of Asians and Puerto Ricans. Both Asian and Puerto Rican women were more likely than their counterparts in other racial/ethnic groups to receive doctorates in engineering and chemistry; they were less likely to receive doctorates in the social sciences. Asian women were also more likely than those in other groups to receive doctorates in the biological sciences and less likely in psychology. (See appendix table 5-17.)

The field distributions of male S&E doctorate recipients varied by race/ethnicity. Asian men were more likely than men of other racial/ethnic groups to be in engineering, especially electrical engineering, and less likely than men of other racial/ethnic groups to be in psychology or the social sciences. Black and American Indian men were more likely than men of other racial/ethnic groups to be in the social sciences and less likely than men of other racial/ethnic groups to be in the biological sciences. Higher percentages of Hispanic and American Indian men were in psychology, and a lower percentage of Mexican American men were in engineering, than was the case among men of other racial/ethnic groups. (See appendix table 5-17.)

Students with disabilities

The number of S&E doctorates earned by persons with disabilities was 332 in 1999, or about 1 percent of the total number of such degree awards. The number and percentage of S&E doctorate recipients with disabilities have not changed appreciably since 1993. (See appendix table 5-18.) The number of S&E doctorate recipients with orthopedic impairments increased since 1993, whereas the number with visual impairments decreased. (See appendix table 5-18.) Orthopedic impairments and multiple disabilities are the most prevalent types of disability reported by S&E doctorate recipients with disabilities. (See figure 5-8.)

Higher percentages of doctoral recipients with disabilities than of those without earned their doctorates in 1999 in psychology, particularly clinical psychology—24 versus 14 percent; lower percentages earned their doctorates in the physical sciences and engineering. (See appendix table 5-20.)

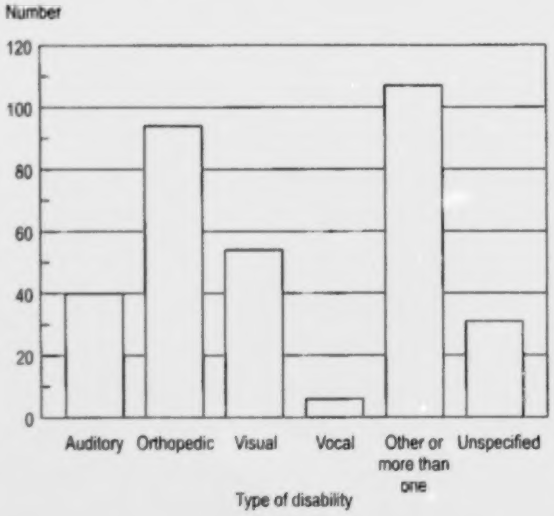
Sources of financial support

Women

Among 1995–99 U.S. citizen and permanent resident S&E doctorate recipients, women were more likely than men to rely primarily on personal sources of financial support for their graduate education: 30 percent of women,

Figure 5-8

Types of disability reported by S&E doctorate recipients with disabilities: 1999



SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

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Baccalaureate-Origin Institutions for S&E Doctorate Recipients With Disabilities

The baccalaureate-origin institutions of 1995–99 S&E doctorate recipients with disabilities were, for the most part, large research universities (see footnote to sidebar on "Baccalaureate-Origin Institutions for Female Recipients of S&E Doctorates" for an explanation of the Carnegie classification of institutions). Among the 67 academic institutions that served as the baccalaureate origin of five or more S&E doctorate recipients with disabilities, all but 11 were research institutions. (See appendix table 5-19.) The University of California–Berkeley and the University of Wisconsin–Madison were the baccalaureate origin institutions of the largest numbers of S&E doctorate recipients with disabilities. Academic institutions that specifically serve students with disabilities, e.g., those that serve deaf or blind students, are not major producers of S&E bachelor's or doctorate degree recipients with disabilities.

compared to 21 percent of men, relied primarily on personal sources. This disparity stems in large part from the fact, noted in the previous chapter, that female S&E graduate students are more likely than male to major in psychology, and psychology doctorate recipients are far more likely than those in other fields to rely on personal sources of support. Half of the 1995–99 female psychology doctorate recipients relied primarily on personal sources of support, compared with 20 percent of women receiving doctorates in other S&E fields. Among psychology doctorate recipients, similar percentages of men and women relied on personal sources of financial support.

Female S&E doctorate recipients were less likely than their male counterparts to rely primarily on research assistantships: 24 percent of women, but 33 percent of men, relied primarily on research assistantships for their support. Again, these differences are related to doctoral field. Female S&E doctorate recipients are less likely than male to have majored in engineering; the physical sciences; the earth, atmospheric, and ocean sciences; and the agricultural sciences—all fields in which a large proportion of doctorate recipients are supported primarily by research assistantships. Within these fields, the percentages of men and women supported primarily by research assistantships are more similar. The one exception in this regard is computer science, where the percentage of women supported by research assistantships is much lower than that for men: 20 percent versus 34 percent. (See appendix table 5-21.)

Minorities

Among 1995–99 U.S. citizen and permanent resident S&E doctorate recipients, a smaller percentage of Asians than of other racial/ethnic groups relied primarily on personal sources of support. On the other hand, larger percentages of Asians than of other groups received research assistantships and teaching assistantships. (See appendix table 5-22.) As with women, these differences are attributable at least in part to variations in field of doctorate. Asians are more likely than other racial/ethnic groups to receive doctorates in engineering and the physical sciences—as noted, fields in which reliance on research assistantships is prevalent. However, even within other major S&E fields, a higher percentage of Asians than of other groups rely primarily on research assistantships.[5]

Larger percentages of black, Hispanic, and American Indian S&E doctorate recipients rely on loans to finance their graduate education. As noted earlier, these groups are more likely to earn their doctorates in psychology and the social sciences, fields in which reliance on loans is prevalent. However, within many major S&E fields, larger shares of black, Hispanic, and American Indian 1995–99 doctorate recipients than of their white or Asian counterparts relied on loans. Also, within major S&E fields, larger shares of black, Hispanic, and American Indian S&E doctorate recipients than of whites or Asians relied primarily on fellowships; smaller shares relied on research assistantships.

Students with disabilities

Among 1995–99 U.S. citizen and permanent resident S&E doctorate recipients, a larger percentage of students with disabilities than of those without relied on loans and personal sources of income as their primary source of support in graduate school. A smaller percentage of students with disabilities than of those without relied primarily on research assistantships. (See appendix table 5-23.) These differences may be attributable to variations in field of doctorate, as is the case for women and minorities. They may also be attributable to differences in age between S&E doctorate recipients with and without disabilities. Because the numbers of students with disabilities receiving doctorates in S&E is so small, it is difficult to determine whether primary source of support differs by disability status within fields or age groups.

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[5] These differences may be due—at least in part—to variations in field as well as eligibility for various types of aid. For example, Asians who initially entered graduate school as students on temporary visas may not have been eligible for many Federal loan programs but would have been eligible for research assistantships.

Demographic characteristics

Differences in age, parental education, marital status, and presence of dependents may potentially explain differences in amount and type of financial assistance needed (U.S. ED/NCES 2000), decision to enroll full or part time, decision to pursue a master's or doctoral degree, persistence and completion of graduate school, and later careers. Among those who earned doctorates in S&E,[6] variations in most of these demographic characteristics are not large between men and women or between students with and without disabilities. Variations are large, however, among racial/ethnic groups.

Women

The demographic characteristics of male and female S&E doctorate recipients in 1999 were similar in many respects. The median age at time of doctorate receipt was the same for men and women—31.4 years old—and approximately half of both men and women were between the ages of 29 and 36 when they received their doctorate. (See appendix table 5-24.) Parents' educational backgrounds were also similar—approximately 25 percent of the mothers and 41 percent of the fathers of both male and female S&E doctorate recipients had completed a master's or higher degree. (See appendix table 5-25.) Although little difference existed between men and women in terms of marital status, women were less likely than men to have dependents while in graduate school. At the time of doctoral degree receipt, approximately one-third of both men and women had never been married, while 68 percent of women and 55 percent of men reported having no dependents. (See appendix table 5-26.)

Minorities

Among 1999 S&E doctorate recipients, racial/ethnic groups differed greatly in demographic characteristics such as age, educational background of parents, marital status, and presence of dependents. American Indians, blacks, and "other" Hispanics were older, on average, than other racial/ethnic groups at the time of doctorate receipt. The median age at doctorate award was 34 for American Indians, and 33 for both blacks and "other" Hispanics, compared to 31 for whites and persons of Puerto Rican descent, and 32 for Asians and persons of Mexican descent. (See appendix table 5-24.)

Parents' educational backgrounds varied by race/ethnicity in 1999. In general, the parents of white doctorate recipients had completed more education than their racial/ethnic counterparts. Nonwhite doctorate recipients were more likely than their white counterparts to be the first in their family to go to college. The fathers of 43 percent of white doctorate recipients had completed a master's or higher degree, compared with 25 percent of American Indians and persons of Mexican descent, 25 percent of blacks, 32 percent of persons of Puerto Rican descent, 33 percent of "other" Hispanics, and 35 percent of Asians. Conversely, the fathers of 5 percent of white doctorate recipients had less than a high school education, compared with between 12 and 30 percent for other racial/ethnic groups. (See appendix table 5-25.)

Marital status of S&E doctorate recipients in 1999 also differed by race/ethnicity. Blacks were less likely and Asians more likely than other groups to be married. Whites were the least likely, and American Indians the most likely, to have dependents—only 38 percent of whites had dependents, compared with 55 percent of American Indians and from 44 to 48 percent of Asians, blacks, and Hispanics. (See appendix table 5-26.)

Students with disabilities

Except for age, the demographic characteristics of S&E doctorate recipients with and without disabilities were similar in 1999. Little difference existed between students with and without disabilities in terms of marital status or presence of dependents. At the time of doctorate receipt, approximately one-third of students both with and without disabilities were single, and 60 percent of both groups reported having no dependents. (See appendix table 5-26.) Parents' educational backgrounds were also similar—39 percent of the fathers of doctorate recipients with disabilities and 41 percent of the fathers of doctorate recipients without disabilities had completed a master's or higher degree. (See appendix table 5-25.)

Students with disabilities are older at the time of doctorate award than students without. In 1999, the median age at doctorate for students with disabilities was 37, compared to 31 for students without disabilities. Approximately half of students with disabilities were between the ages of 31 and 45 when they received their doctorate. (See appendix table 5-24.)

Satisfaction with field of doctoral program

One indicator of satisfaction with degree field is the answer to this question: "If you had the chance to do it over again, how likely is it that you would choose the same field of study for your highest degree?" When asked this in a 1997 follow-up survey of recent S&E doctorate recipients (those who had received their doctorates between 1992 and 1997), 17 percent said they were "not at all likely" to choose the same field of study. Satisfaction or dissatisfaction with choice of field of study varied by race/ethnicity and by disability status. Men and women differed little in their responses to the question. Asians were least likely of all racial/ethnic groups to respond that they were very likely to choose the same field—in S&E as a whole, and within each major S&E field. Among recent S&E doctoral recipients, 40 percent of Asians and between 52 and 56 percent of members of other racial/ethnic groups reported being "very likely" to choose the same field of study if they had the chance to do it over again. Similarly, recent doctoral recipients with disabilities were less likely than those without disabilities to respond that they would choose the same field—in S&E as a whole, and within each major S&E field. (See appendix table 5-27.)

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[6] Data in this section refer to U.S. citizens and permanent residents only.

Postgraduation plans and postdoctoral fellowships

Among U.S. citizen and permanent resident S&E doctorate recipients in 1999 who had definite postgraduation plans at the time they received their doctorate, 40 percent planned to pursue postdoctoral study. (See appendix table 5-28.)

Women

Among all U.S. citizen and permanent resident S&E doctoral recipients in 1999 with definite postgraduation plans, women were more likely than men to have plans for postdoctoral study (43 versus 38 percent) or for academic employment (25 versus 20 percent). On the other hand, they were less likely than men to have plans for employment in industry (15 versus 26 percent). These general findings vary somewhat by field; thus, in some fields, men's and women's postgraduation plans were similar. For example, within the biological sciences, 74 percent of both women and men planned postdoctoral study, and 7 percent planned industrial employment. Within other fields, differences by sex remain. In the physical sciences, for instance, 42 percent of women and 51 percent of men planned postdoctoral study. (See appendix table 5-28.)

The number of postdoctoral fellows—of either sex—in S&E steadily increased from 1990 to 1999. (See appendix table 5-29.) During this period, the proportion of S&E postdoctoral fellowships held by women rose from 26 to 30 percent. Both the number of female postdoctoral fellows and the percentage of females as a share of total increased in all major S&E fields.

Minorities

Black and American Indian U.S. citizen and permanent resident S&E doctorate recipients in 1999 were less likely and Asians more likely than members of other racial/ethnic groups to have definite plans for postdoctoral study. Among those with plans for employment, a higher percentage of blacks, and a lower percentage of Asians, than of other groups had definite plans for academic employment. A higher percentage of Asians than of other groups had definite plans for industrial employment. (See appendix table 5-30.) These patterns are related to differences among racial/ethnic groups in degree field—those with degrees in the social sciences and psychology are less likely than those whose degrees are in other fields to take postdoctoral appointments and are more likely to choose academic employment. Those with degrees in engineering are less likely than those whose degrees are in other fields to take postdoctoral appointments and are more likely to choose industrial employment.

Students with disabilities

Students with disabilities were less likely than those without disabilities among the 1999 cohort of U.S. citizen and permanent resident S&E doctoral recipients to have plans for postdoctoral study (34 versus 40 percent) or for industrial employment (18 versus 22 percent). (See appendix table 5-31.) These patterns are again related to differences in degree field, as is the case for women and minorities. Higher percentages of doctorate recipients with disabilities than of those without disabilities earned their Ph.D. in psychology and the social sciences, fields in which fewer recipients pursue postdoctoral study; lower percentages earned their doctorates in the physical and biological sciences, which are fields in which postdoctoral study is prevalent.

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Chapter 6

Employment

Overview

Differences in participation of women, minorities, and persons with disabilities in science and engineering employment are rooted in differences in their current and historic participation in science and engineering education. As previous chapters show, the proportions of S&E degrees earned by women and minorities have increased over time. Because the S&E labor force is comprised of people who received their degrees from about the 1940s to the present and because women and minorities were a smaller percentage of earlier years' degree recipients, women and minorities are a smaller percentage of the labor force as a whole than they are of current degree recipients.

Trends in S&E employment, 1993–99

Previous chapters discussed the various populations that feed into the labor force.[1] This section highlights the growth, by demographic group, of working scientists and engineers.[2] The number of employed people in the United States with either S&E degrees or S&E occupations grew from 9.8 million to 11.0 million from 1993 to 1999. The number of those who are employed in S&E occupations has grown from 3.3 to 3.5 million over that time period.[3] (See appendix table 6-1.)

Women

Women constituted 35 percent of employed people with either an S&E degree or in an S&E occupation and 24 percent of those employed in an S&E occupation in 1999. (See appendix table 6-1.) Roughly the same proportion of women were employed in S&E in 1999 as in 1993. Further, women accounted for approximately the same percentages of physical scientists, life scientists, social scientists, and engineers in 1993 and 1999. They comprised a slightly smaller percentage of computer and mathematical scientists in 1999 than in 1993.

Minorities

Asians, blacks, Hispanics, and American Indians combined were 17 percent of employed persons with either S&E degrees or S&E occupations and 18 percent of those in S&E occupations in the United States in 1999.[4] Asians made up 11 percent, blacks and Hispanics were each about 3 percent, and American Indians were less than 0.5 percent of those in S&E occupations in 1999. (See appendix table 6-1.) The percentage distribution of employed scientists and engineers by race/ethnicity changed little between 1993 and 1999, with the exception of a slight increase in the proportion that is Asian and a slight decrease in the proportion that is white.

Minority women

Seven percent of employed people with either an S&E degree or in an S&E occupation and 5 percent of those employed in an S&E occupation in 1999 were minority women. (See appendix table 6-2.) More specifically, Asian women were 3 percent, black and Hispanic women were each 1 percent, and American Indian women were 0.1 percent of those employed in S&E occupations. Within every racial/ethnic group, women accounted for a smaller percentage of total scientists and engineers than did men.

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[1] Much of the data in this chapter come from the National Science Foundation's Scientists and Engineers Statistical Data System (SESTAT) surveys. (See appendix A for a description of the SESTAT population and information relating to standard errors of the estimates from these surveys.) Because changes were made in these surveys over time to improve data quality and survey coverage, trend data before the surveys of the 1990s on S&E employment are not available; comparisons can be made, however, between 1993 and 1999.

[2] The definition of "scientists and engineers" used in SESTAT includes all persons who have ever received a bachelor's degree or higher in an S&E field, plus persons holding a non-S&E bachelor's or higher degree who were employed in an S&E occupation at the time they first were surveyed in the 1990s.

[3] Because after 1993 the SESTAT surveys identify individuals for inclusion at the point of earning a science or engineering degree from a U.S. institution, two subpopulations of scientists and engineers in the United States are underrepresented in the SESTAT integrated database in subsequent survey years: (1) new immigrants with S&E degrees earned outside the United States who entered the U.S. labor force after 1990, and (2) people with no S&E degrees working in S&E occupations after 1990. See appendix A for more information on undercoverage in the SESTAT surveys.

[4] The racial/ethnic data presented in this chapter are not restricted to U.S. citizens and permanent residents but also include persons on temporary visas. Such people represent only a small proportion of employed scientists and engineers (less than 2 percent).

Persons with disabilities

People with disabilities accounted for 7 percent of employed people with either an S&E degree or in an S&E occupation and 6 percent of those employed in an S&E occupation in 1999; these were about the same percentages as in 1993. (See appendix table 6-3.)

Measuring Disabilities for People in the Labor Force

The National Science Foundation's (NSF's) SESTAT surveys use a functional definition of disability patterned after one developed by the U.S. Bureau of the Census. The survey questions ask individuals, "What is the USUAL degree of difficulty you have with [specific tasks involving seeing, hearing, walking, and lifting]?" (The full wording of these alternatives in the survey forms is "SEEING words or letters in ordinary newsprint [with glasses/contact lenses if you usually wear them]," "HEARING what is normally said in conversation with another person [with hearing aid, if you usually wear one]," "WALKING without assistance [human or mechanical] or using stairs," "LIFTING or carrying something as heavy as 10 pounds, such as a bag of groceries.") Respondents are given five choices for each item: "none," "slight," "moderate," "severe," and "unable to do." Unless elsewhere noted, individuals in these surveys are classified as having a disability if they have at least moderate difficulty in performing one or more of these tasks.

Although this definition was designed to provide a relatively objective measure of disability, it is important to note that it does not capture all disabilities. For example, learning disabilities, behavioral disorders, and speech impairment are not included in the surveys.

Labor force participation, employment, and unemployment

Women

Women with either an S&E degree or in an S&E occupation are less likely than men to be in the labor force (that is, either employed or seeking employment). Among those in the labor force, women are more likely than men to be unemployed:[5] 2.0 percent of women and 1.6 percent of men were unemployed in 1999. (See text table 6-1.)

Text table 6-1

Labor force participation and unemployment rates of scientists and engineers, by sex, race/ethnicity, and disability status: 1999

Sex, race/ethnicity, and disability status	Labor force participation rate[a]	Unemployment rate[b]
Total	85.6	1.7
Male	87.8	1.6
Female	81.9	2.0
White, non-Hispanic	84.9	1.7
Asian/Pacific Islander	89.4	2.0
Black, non-Hispanic	90.0	2.1
Hispanic	90.0	2.6
American Indian/Alaskan Native	81.7	2.9
Without disabilities	87.1	1.6
With disabilities	69.7	3.5

[a] The labor force participation rate is the ratio of those who are either employed or not employed and seeking employment to all scientists and engineers.

[b] The unemployment rate is the ratio of those who are not employed and seeking employment to the total labor force. Those who are not in the labor force are excluded from the denominator.

NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Women's unemployment rates were higher than those for men within most major age groupings. (See appendix table 6-4.)

Reasons for not working (whether not in the labor force or unemployed) differ in some respects by sex. Women were more likely than men to cite family responsibilities (36 versus 3 percent), and men were more likely than women to cite retirement (74 versus 29 percent). (See appendix table 6-5.) These differences reflect variations in the age distributions of men and women as well as differing expectations as to who assumes family responsibilities.[6]

A higher percentage of women than of men with either an S&E degree or in an S&E occupation are employed part time. Of those who were employed in 1999, 19 percent of women and 6 percent of men were employed part time. (See appendix table 6-4.) Women who are employed part time are less likely than men to prefer full-time employment. (See appendix table 6-6.) Also, women who are employed part time are far more likely than men to cite family responsibilities as the reason for their employment status: 48 percent of the women working part time and 12 percent of the men cited family responsibilities as the reason for their work status in 1999. On the other hand, 41 percent of men and 8 percent of women cited retirement as the reason for part-time employment. Thus, as with unemployment, variations in male/female age distribution, as well as varying family responsibilities, are factors in part-time employment choices.

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[5] The unemployment rate is the ratio of those who are not employed and seeking employment to the total labor force. Those who are not in the labor force are excluded from the denominator.

[6] See NSF (1996), p. 66, for a discussion of the relationship between unemployment and part-time employment and the presence of children under the age of 18.

Minorities

Asians, blacks, and Hispanics with either an S&E degree or in an S&E occupation are more likely than whites to be in the labor force (i.e., employed or looking for employment). Between 89 and 90 percent of Asians, blacks, and Hispanics with either an S&E degree or in an S&E occupation were in the labor force in 1999, compared with 85 percent of whites. (See text table 6-1.)

Although nonwhite scientists and engineers are less likely to be out of the labor force than whites, among those who are in the labor force, nonwhite scientists and engineers from some racial/ethnic groups are more likely to be unemployed. In 1999, the unemployment rate of white scientists and engineers was lower than that of Hispanics and Asians. (See text table 6-1.)

Age accounts for some of these differences in labor force participation. Asian, black, Hispanic, and American Indian scientists and engineers are younger than white scientists and engineers: 37 percent of white scientists and engineers were 50 or older in 1999, compared with 26 percent of Asians, 32 percent of blacks, and 21 percent of Hispanics.

Persons with disabilities

The labor force participation rates of scientists and engineers with and without disabilities are quite different. Thirty percent of persons with disabilities in the population of scientists and engineers were out of the labor force, compared with 13 percent of those without disabilities. (See text table 6-1.) Age accounts for some, but not all, of these differences in labor force participation. Those with disabilities are older than those without: 64 percent of those with disabilities were 50 or older in 1999, compared with 33 percent of those without disabilities. Older scientists and engineers are likely to be out of the labor force because of retirement. (See appendix table 6-4.)

Chronic illness or permanent disability can be another factor accounting for some of the tendency for persons with disabilities to be out of the labor force.[7] Both persons with and without disabilities cited retirement as their primary reason for not working (70 and 51 percent, respectively); 26 percent of people with disabilities and 3 percent of those without cited the category "chronic illness or permanent disability" as their reason. (See appendix table 6-5.)

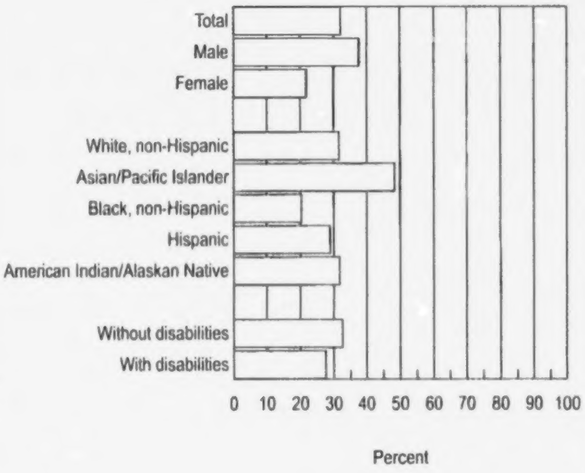
Among those in the labor force, persons with disabilities are more likely than those without to be unemployed. The 1999 unemployment rate for scientists and engineers with disabilities was 3.5 percent, compared with 1.6 percent for those without disabilities. (See text table 6-1.)

Occupations of scientists and engineers

About one-third of employed people identified as scientists and engineers in the SESTAT surveys work in an S&E occupation. (See appendix table 6-1 and figure 6-1.) Many of those who are not employed in science and engineering occupations are employed in occupations within the S&E enterprise, such as management, health-related occupations, and sales and marketing. Throughout the remainder of this chapter, scientists and engineers are defined in terms of occupation, not degree field, unless otherwise noted.[8]

Figure 6-1

Percentage of employed scientists and engineers in S&E occupations, by sex, race/ethnicity, and disability status: 1999



NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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[7] Age at onset of disability is another important consideration. About half of all scientists and engineers with disabilities became disabled after age 30. Those who were disabled since birth may face different challenges entering the labor force or advancing in their careers than those who became disabled later in life. More research is needed on this topic (NSF/SRS 2000).

[8] See appendix A for the SESTAT classification of S&E and non-S&E occupations.

Educational Field Versus Occupational Category

In many analyses of human resources for science and technology, there are two principal ways in which the data are presented: by educational field or by occupational category. Many times, these two separate concepts and the terminology to describe them are used interchangeably. For example, individuals with engineering degrees as well as individuals in the engineering profession can be referred to as "engineers." This all-encompassing nomenclature leads to confusion and a lack of precision, because, in fact, not all individuals with engineering degrees work in an engineering occupation and not all individuals who work in an engineering occupation have an engineering degree.

In the present analysis, *educational field* refers to the specific degree that an individual holds. However, an individual may hold multiple degrees. This consideration particularly applies among the population of scientists and engineers, of whom almost 40 percent hold more than one degree, often in more than one field. In the analyses in this chapter, educational field data refer to an individual's highest degree level (doctorate, first-professional, master's, or bachelor's) and/or field. Occupation data generally refer to the principal job an individual holds. Although people in the labor force may hold more than one job, in the analyses presented here, the focus is on what the respondent chooses to report as his or her *principal* job.

Scientists and Engineers Who Hold Second Jobs

In 1997, 12 percent of employed U.S. scientists and engineers (defined by degree or occupation) held second jobs (NSF/SRS 2001). Although the percentage of scientists and engineers with second jobs was relatively stable during the mid-1990s, there are notable differences in the demographic characteristics of those people who held second jobs.

Women were slightly more likely than men to hold second jobs (about a 1 percentage point difference). The percentages of women employed in second jobs were slightly higher than those of men for all degree levels. (See text table 6-2.)

Among racial/ethnic groups, 12 percent of Hispanics, 14 percent of American Indians, and 15 percent of blacks held second jobs, compared to 8 percent of Asians and 12 percent of whites. Blacks and American Indians were slightly more likely than members of other racial/ethnic groups to hold second jobs at all degree levels.

Scientists and engineers with disabilities were slightly more likely to have second jobs (13 percent) than those without disabilities (11 percent). For all degree levels, persons with disabilities were more likely than those without to have a second job.

Women

As with degree fields (see chapters 3 and 5), women and men differ in S&E occupation, with women constituting higher percentages of some S&E occupations than of others. For example, in 1999 more than half of all psychologists (64 percent) and sociologists/anthropologists (52 percent) were women, compared with about 10 percent of physicists/astronomers and engineers. (See appendix table 6-7.) Women also constitute higher percentages of some engineering occupations than others; for example, 16 percent of chemical engineers in 1999 were women, compared with about 6 percent of electrical and mechanical engineers.

Minorities

Asians, blacks, and American Indians account for larger percentages of some S&E occupations than of others. (See appendix table 6-8.) In 1999, Asians made up a larger percentage of biological scientists (accounting for 15 percent of total), electrical engineers (15 percent), computer scientists (14 percent), and chemists (13 percent) than of other occupations (e.g., they were only 4 percent of the social scientists, including psychologists). Blacks accounted for a higher percentage of mathematical scientists (6 percent) and social scientists (5 percent) than of other occupations; for example, they comprised only 2 percent of the biological scientists and 1 percent of earth scientists/geologists/oceanographers. Hispanics were more proportionally distributed among occupations, accounting for roughly 2 to 4 percent in most S&E occupations.

Minority women

The occupational distributions of minority women among S&E occupations generally resemble that of white women. Within each racial/ethnic group, higher percentages of female scientists and engineers than of male are biological scientists and psychologists, and lower percentages are engineers. About 40 to 50 percent of male scientists and engineers in each racial/ethnic group were engineers in 1999, compared with less than 20 percent of their female

Text table 6-2

Likelihood of employed scientists and engineers holding a second job, by sex, race/ethnicity, disability status, and highest degree: 1997

Sex, race/ethnicity, and disability status	Total[a]	Highest degree level		
		Bachelor's	Master's	Doctorate
	Percent employed in a second job			
Total	11.5	10.5	12.4	15.1
Male	11.2	10.0	12.0	14.4
Female	12.1	11.4	13.1	17.3
White, non-Hispanic	11.5	10.3	12.6	16.0
Asian/Pacific Islander	7.8	7.9	7.1	8.3
Black, non-Hispanic	15.2	13.9	17.8	19.0
Hispanic	12.3	11.9	12.5	14.9
American Indian/ Alaskan Native	14.1	12.9	15.9	23.3
Without disabilities	11.4	10.4	12.3	15.0
With disabilities	13.0	11.9	14.1	17.2

[a] Includes first-professional degrees, which are not broken out separately.

NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Asian S&E Doctoral Recipients

Among S&E doctoral recipients, Asians differ from members of other racial/ethnic groups in that they are overwhelmingly foreign-born. Foreign-born Asians account for 93 percent of the Asian S&E doctoral recipients in the United States; in contrast, approximately 12 percent of non-Asian S&E doctoral recipients in the United States are foreign-born. More than half (53 percent) of all Asian S&E doctoral recipients were born in the People's Republic of China, Taiwan, or Hong Kong. Another 24 percent were born in India, and 4 percent were born in Korea.

The occupational distribution of Asian S&E doctoral recipients is quite different from that of other racial/ethnic groups. Whether U.S.- or foreign-born, Asians are more likely than members of other racial/ethnic groups to be engineers, and they are less likely to be social scientists. For example in 1999, among U.S.-born S&E doctoral recipients, 19 percent of Asians were social scientists, compared to between 30 and 52 percent of members of other racial/ethnic groups. (See text table 6-3.)

Text table 6-3

S&E doctoral recipients employed in an S&E occupation, by birthplace, race/ethnicity, and occupation: 1999

Birthplace and race/ethnicity	Number	Percent distribution					
		Total	Computer and mathematical scientists	Life and related scientists	Physical and related scientists	Social and related scientists	Engineers
All U.S.-born	314,722	100	11	26	19	31	14
White, non-Hispanic	297,105	100	11	26	19	30	14
Asian/Pacific Islander	4,821	100	12	36	16	19	18
Black, non-Hispanic	5,494	100	7	20	12	52	9
Hispanic	5,833	100	10	25	15	39	11
All non-U.S.-born	102,014	100	19	21	17	14	30
White, non-Hispanic	33,709	100	16	20	17	22	26
Asian/Pacific Islander	59,896	100	21	22	17	7	34
Black, non-Hispanic	3,161	100	13	23	15	27	22
Hispanic	5,124	100	15	27	16	24	19

NOTES: Details may not add to totals because of rounding. Total includes American Indian/Alaskan Native and "other" race/ethnicity not shown separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

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counterparts. Asian women differ from women in other racial/ethnic groups in that a relatively small proportion (2 percent in 1999) were psychologists, compared to between 11 and 17 percent of women in other racial/ethnic groups. (See appendix table 6-2.)

Persons with disabilities

Scientists and engineers with and without disabilities do not differ greatly by S&E occupation: 10 percent of the members of both groups in S&E occupations were life scientists, 8 percent of both were physical scientists, 10 percent of both were social scientists, and 39 percent of both were engineers in 1999. (See appendix table 6-9.) Similar proportions of scientists and engineers with and without disabilities were computer scientists (28 versus 30 percent).

Sector of employment

Women

Among all those employed in S&E occupations in 1999, women were less likely than men to be employed in the private for-profit sector—49 versus 65 percent—and more likely to be employed in 4-year colleges or universities—21 versus 12 percent. These variations by sector primarily stem from differences in occupation. Women are less likely than men to be engineers or physical scientists, which are occupations that tend to be in business or industry. Within occupations, the percentages of men and women employed in industry and in 4-year colleges or universities are more similar. (See appendix table 6-10.)

Minorities

Asians are more likely than members of other racial/ethnic groups to be employed in business or industry. Among those in S&E occupations in 1999, 68 percent of Asians, compared with between 55 and 61 percent of whites, blacks, Hispanics, and American Indians, were employed in the private for-profit sector. (See appendix table 6-10.) Asians are also more likely than members of other racial/ethnic groups to be engineers, an occupational group likely to be employed in business or industry. Between 14 and 15 percent of employed scientists and engineers within each racial/ethnic group were employed in 4-year colleges or universities in 1999.

Persons with disabilities

People employed in S&E occupations with disabilities are about as likely as those without to be employed in for-profit business or industry: 62 versus 57 percent in 1999. They are also as likely to be employed in academia as their counterparts without disabilities: 14 percent of both groups were employed in 4-year colleges or universities in 1999. (See appendix table 6-10.)

Nondoctoral scientists and engineers

Among those employed in S&E occupations in 1999, 85 percent of women and 86 percent of men had either a bachelor's or master's degree as their highest degree. (See appendix table 6-1.) The occupations of these nondoctoral scientists and engineers, as is true for all of those employed in S&E, differ by sex, with women constituting the majority of people in some S&E occupations, and men the majority in others. For example, in 1999, almost two-thirds of all social and related scientists whose highest degree was a baccalaureate were women. Men, on the other hand, constituted 90 percent of the engineers and 73 percent of the physical scientists and computer/mathematical scientists whose highest degree was a baccalaureate.

Asians employed in S&E occupations are less likely than members of other racial/ethnic groups to have a bachelor's or master's degree as their highest degree conferred: 80 percent of employed Asian scientists and engineers had either a bachelor's or master's degree as their highest degree in 1999, compared with between 86 and 90 percent of all other racial/ethnic groups. Higher proportions of Asian scientists and engineers than of other racial/ethnic groups held doctoral degrees. (See figure 6-2 and appendix table 6-1.) Similar percentages of those in S&E occupations with and without disabilities (84 and 86 percent, respectively, in 1999) have a bachelor's or master's as their highest degree. (See appendix table 6-3.)

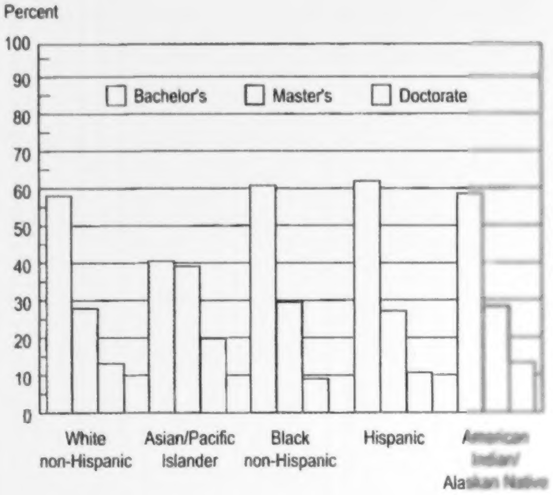
Professional development activities

Employed scientists and engineers engage in many different professional development activities. These include attending meetings, participating in professional societies or associations, and attending work-related workshops or seminars.

Approximately half of all employed scientists and engineers, as defined by education or occupation, in 1999 attended professional meetings in the previous year. (See text table 6-4.) Men differed little from women, and scientists and engineers with disabilities differed little from those without disabilities, in attendance at professional meetings. The various racial/ethnic groups did differ somewhat, however. For example, Asians were less likely than members of other racial/ethnic groups to attend professional meetings, although this difference is likely field related; Hispanic engineers were more likely than white engineers to attend

Figure 6-2

Percentage distribution by highest degree of those employed in S&E occupations within each racial/ethnic group: 1999



SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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professional meetings; and black physical scientists were less likely than most others in their profession to attend professional meetings.

Slightly more than half of employed scientists and engineers in 1999 reported belonging to a national or international professional society or association. (See text table 6-5.) Among life and physical scientists, women were less likely than men to be members of a professional society or association. Among computer/math scientists and life and related scientists, blacks were more likely than members of most other racial/ethnic groups to belong to professional societies; and, among social and related scientists, both blacks and whites were more likely than members of most other racial/ethnic groups to belong to professional societies. There were few differences by disability status in professional society membership.

Sixty-seven percent of those employed in S&E occupations in 1999 attended work-related training in the previous year. (See figure 6-3.) Of those attending such training, 87 percent pursued training in their occupational field; 26 percent pursued management training; and 22 percent pursued general professional training, such as public speaking or business writing. (See appendix table 6-11.) Among those attending training, men were more likely than women to attend management training. There were relatively few differences by race/ethnicity or disability status in this type of training. Regardless of sex, race/ethnicity, or

Text table 6-4

Employed scientists and engineers who had attended professional meetings in the previous year, by sex, race/ethnicity, disability status, and broad occupation: 1999

(Percent)

Sex, race/ethnicity, and disability status	Total	Occupation					
		Computer/ mathematical scientist	Life and related scientist	Physical and related scientist	Social and related scientist	Engineer	Non-S&E
Total	55.8	41.3	72.0	65.3	76.4	49.9	57.1
Male	56.2	41.3	74.3	68.4	76.7	49.8	58.5
Female	55.2	41.2	67.9	54.8	76.2	50.9	54.9
White, non-Hispanic	56.5	41.3	72.3	65.8	77.1	49.4	57.8
Asian/Pacific Islander	48.7	40.7	69.9	65.5	66.0	50.2	47.5
Black, non-Hispanic	55.4	41.5	74.8	45.7	69.6	52.6	56.6
Hispanic	55.9	44.7	66.7	66.2	78.6	58.3	55.1
American Indian/Alaskan Native	58.3	38.9	85.5	86.3	84.6	56.1	56.4
Without disabilities	55.9	41.3	74.3	68.4	76.7	49.8	57.2
With disabilities	54.2	40.4	68.3	64.8	79.5	49.2	54.8

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1999. "Professional meetings" include professional society/race/ethnicity not shown separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Text table 6-5

Employed scientists and engineers holding membership in professional societies or associations, by sex, race/ethnicity, disability status, and broad occupation: 1999

(Percent)

Sex, race/ethnicity, and disability status	Total	Occupation					
		Computer/ mathematical scientist	Life and related scientist	Physical and related scientist	Social and related scientist	Engineer	Non-S&E
Total	53.9	35.6	71.3	69.9	76.9	54.4	54.1
Male	55.0	36.0	74.9	72.0	78.8	54.6	56.0
Female	51.8	34.4	65.0	63.0	75.3	52.0	51.3
White, non-Hispanic	54.4	35.2	71.5	69.4	77.7	54.5	54.6
Asian/Pacific Islander	47.9	34.5	70.4	75.1	70.2	52.4	46.6
Black, non-Hispanic	55.7	45.0	78.2	66.2	77.3	57.9	55.4
Hispanic	52.6	37.0	65.6	70.3	69.0	56.1	52.2
American Indian/Alaskan Native	52.0	45.9	67.5	82.0	67.2	56.8	48.8
Without disabilities	54.0	35.6	71.2	70.1	76.8	54.6	54.2
With disabilities	52.7	35.4	73.6	67.4	79.4	51.3	52.8

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Details may not add to totals because of rounding. Total includes "other" race/ethnicity not shown separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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disability status, the top two primary reasons cited by employed scientists and engineers, in S&E and non-S&E occupations, for engaging in work-related training activities were (1) to gain further skills in their occupational field or (2) because it is required or expected by their employers. (See text table 6-6 and appendix table 6-12.)

Salaries of employed scientists and engineers

Many factors explain the various differences that exist between the annual salaries of men and women, among racial/ethnic groups, and between persons with and without disabilities employed full time in S&E occupations. Three of the most important of these factors are length of experience, occupation, and highest degree level. Other reports (NSF/SRS 1996 and NSF/SRS 1999) provide more detailed explanations of the variety of factors influencing salaries for men and women.

Women

Women employed full time in S&E occupations earn less than men on average, but these salary differentials are due primarily to differences in age, length of experience, occupation, and highest degree attained. Female scientists and engineers are younger and have less experience, on average, than male scientists and engineers and are less likely than men to be computer scientists or engineers—occupations that command higher salaries. The 1999 overall median salary for those employed full time in S&E occupations was $50,300 for women and $64,000 for men. Within occupations and by degree levels and for younger age categories, the median salaries of men and women are generally more similar. (See appendix table 6-13.) For example, in 1999, among engineers aged 29 or younger with a bachelor's degree, the median salary was $46,000 for men and $45,000 for women.

Minorities

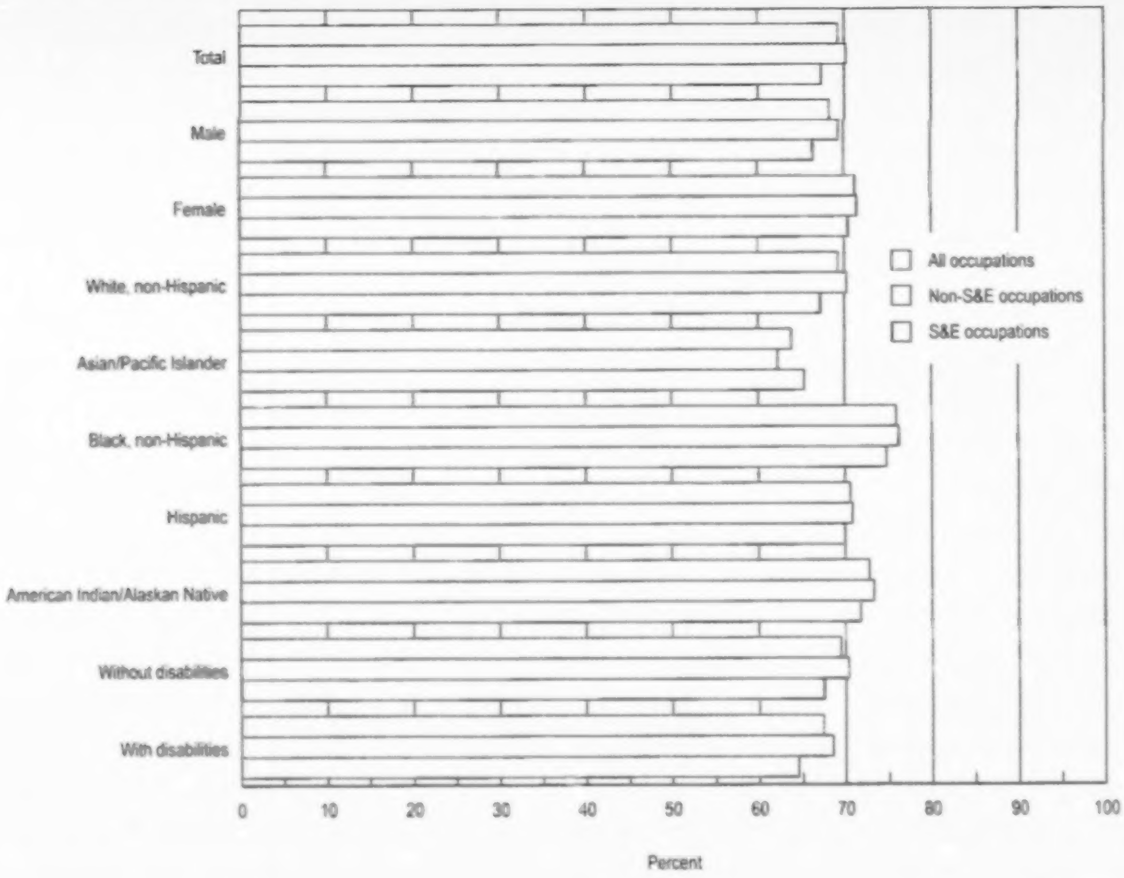
Salaries for those in S&E occupations differ across racial/ethnic groups. Among all who were employed in S&E occupations, the median salaries by racial/ethnic group in 1999 were $63,000 for Asians, $61,000 for whites, $55,000 for Hispanics, $53,000 for blacks, and $50,000 for American Indians. Within S&E occupations and within age and highest degree categories, median salaries are often similar across racial/ethnic groups. (See appendix table 6-14.)

Minority women

Median annual salaries of females employed in S&E occupations of all racial/ethnic groups are generally lower than those of male scientists and engineers. (See appendix table 6-15.) Differences in highest degree (as well as other factors; see NSF/SRS 1996) are also likely to influence salaries; however, small sample size did not permit adjustment by highest degree for this analysis.

Figure 6-3

Percentage of employed scientists and engineers engaged in work-related training, by type of occupation, sex, race/ethnicity, and disability status: 1999



NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Persons with disabilities

Median salaries of scientists and engineers with disabilities are similar to those for scientists and engineers without disabilities. For example, in 1999, among all those employed full time in S&E occupations, the median salary was $60,000 for those without disabilities and $61,600 for those with disabilities. Salaries also differ little within occupations and age groups. For example, the median salary for 30- to 39-year-old computer scientists with a bachelor's degree is $60,000 for those with disabilities and $61,000 for those without disabilities. (See appendix table 6-16.)

Initial labor force experiences of recent graduates

By 1999, the vast majority of the approximately 950,000 individuals who had earned bachelor's, master's, or doctoral degrees in S&E in 1996/97 and 1997/98 from U.S. colleges and universities and who were residing in the United States had entered the labor force. This section focuses on their initial labor force experiences.

Text table 6-6

Primary reason cited by scientists and engineers for attending work-related training, by sex, race/ethnicity, and disability status: 1999

(Percent of those attending)

Sex, race/ethnicity, and disability status	To gain further skills or knowledge in occupational field	Required/ expected by employer	For licensure/ certification
Total	62.1	12.2	10.2
Male	62.5	12.5	10.0
Female	61.4	11.8	10.6
White, non-Hispanic	62.6	12.3	10.6
Asian/Pacific Islander	63.5	10.6	6.7
Black, non-Hispanic	55.9	13.7	9.2
Hispanic	59.4	12.2	9.5
American Indian/ Alaskan Native	57.1	14.0	9.1
Without disabilities	62.2	12.1	10.2
With disabilities	61.0	14.2	9.9

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Details may not add to totals because of rounding. Total includes "other race" not broken out separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Recent bachelor's degree recipients

Among the bachelor's degree earners, approximately 22 percent were enrolled as full-time students in 1999, another 22 percent were employed in S&E occupations, and 51 percent were employed in non-S&E occupations. (See appendix table 6-17.) Although men and women accounted for similar numbers of S&E bachelor's degree recipients, men were twice as likely as women to be employed in a science or engineering occupation.[9] Much of the difference is accounted for by differences in field. Women are far more likely than men to have a bachelor's degree in the social and related sciences, and a much smaller percentage of those with such degrees are employed in S&E occupations.

Among recent S&E bachelor's degree recipients, blacks are the least likely of members of all racial/ethnic groups to be employed in a science or engineering occupation; Asians are the most likely. At least some of these racial/ethnic differences in employment status are field related. For example, blacks are more likely than members of other racial/ethnic groups to have earned their baccalaureate in the social and related sciences—fields in which a small percentage of recent graduates are employed in S&E occupations, and Asians are more likely than members of other racial/ethnic groups to have earned their bachelor's degree in engineering—a field in which a large percentage of recent graduates are employed in S&E occupations. Overall, blacks and Hispanics are as likely as whites to be full-time students after receiving a bachelor's degree.

Although persons with disabilities represent a small percentage of the total bachelor's degree awards in S&E, they are as likely as persons without disabilities to be full-time students, employed in an S&E occupation, or employed in a non-S&E occupation.

Recent master's degree recipients

Among S&E master's degree recipients in 1996/97 and 1997/98, approximately 20 percent were enrolled as full-time students in 1999, 46 percent were employed in an S&E occupation, and 29 percent were employed in a non-S&E occupation. (See appendix table 6-18.) Although men and women made up relatively equal proportions of the master's degree recipients in science fields as a whole, men represented almost 60 percent of those employed in S&E occupations in 1999, and women represented just over 60 percent of those employed in non-S&E occupations. As with bachelor's degrees, the disproportionate number of women with master's degrees in the social and related sciences accounts for a large part of this difference. Among all S&E master's degree recipients, Asians were least likely of members of any racial/ethnic group to be employed in a non-S&E occupation in 1999. Blacks were the least likely to be employed in an S&E occupation and the most likely to be employed in a non-S&E occupation. Persons with disabilities represent a small percentage of the total recipients of master's degrees in S&E, but were as likely as persons without disabilities to be employed in a science or engineering occupation.

Recent doctoral degree recipients

Among doctorate earners in S&E in 1996/97 and 1997/98, 26 percent were working in postdoctoral positions, and another 65 percent were working in full-time jobs in 1999. (See appendix table 6-19.) Women were more likely than men to have postdoctoral positions, to be employed part time, and to be out of the labor force (i.e., not employed and not seeking work). Asians were more likely than other racial/ethnic groups to be in postdoctoral positions; this was especially true for the life sciences, where 60 percent of Asians held postdoctoral positions. Recent doctorate recipients with disabilities were less likely than those without to have postdoctoral positions; they were more likely to have full-time jobs.

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[9] See Rayman and Brett (1995) for factors related to women's persistence in science after graduation.

Approximately 88 percent of the 1996/97 and 1997/98 doctorate earners indicated that between the time they completed their doctorate and the time of the survey (1999) they had either sought or held a "career path" job, defined in the survey as one that helps an individual further his or her career plans in a field in which he or she wants to make a career.

When asked to indicate the extent to which there were limitations imposed on their search for a career path job, the women were more likely than the men to report that their job search was limited "somewhat" or "a great deal" by their spouse's career or employment and by their own desire not to relocate or move to the place of job. (See appendix table 6-20.) Women were no more likely than men to report that family responsibilities limited their career path job search, however.

Racial/ethnic differences in career path limitations were also evident. Black and Hispanic doctorate earners were more likely than members of other racial/ethnic groups to report that debt burden from undergraduate or graduate degrees limited their career path job search. Asian doctorate earners were more likely than members of other racial/ethnic groups to report that their job search was limited because a suitable job was not available. Recent doctorate recipients with and without disabilities reported roughly similar limitations on their career path job search.

A demographic profile: Age and family characteristics

Women

Differences in age are related to many of the differences in employment characteristics between male and female scientists and engineers (defined by either degree or occupation). Women with an S&E degree or occupation are younger, on average, than men: 44 percent of the women and 32 percent of the men with an S&E degree or occupation in 1999 were less than 40 years old. (See appendix table 6-21.)

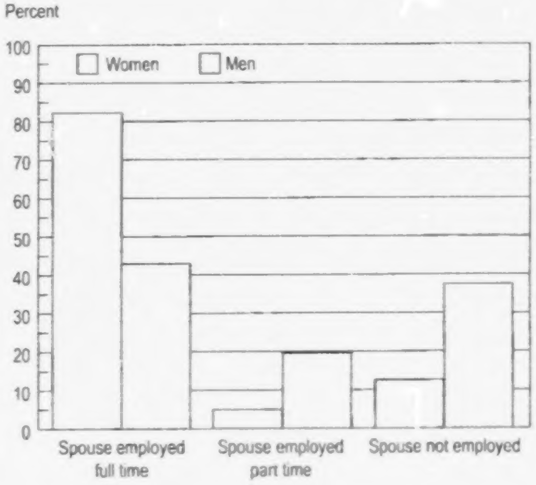
Women with an S&E degree or in an S&E occupation are less likely than men to be married: in 1999, 62 percent of these women were married, compared with 75 percent of their male counterparts. (See appendix table 6-21.) Among those who are married, women are more likely than men to face the potential difficulty of accommodating dual careers. Women are almost twice as likely as men to have a spouse working full time: 82 percent of the married women and 43 percent of the married men had a spouse working full time in 1999. (See figure 6-4 and appendix table 6-21.) Only 13 percent of the married women, but 38 percent of the married men, had a spouse who did not work.

Among those with an S&E degree or occupation, married women are more likely than married men to have a spouse whose job requires technical expertise at the bachelor's degree level or above in engineering, computer science, math, or natural science. (See appendix table 6-21.) Thirty-eight percent of women and 18 percent of men had spouses whose jobs required expertise in these fields. Men and women with an S&E degree or occupation do not differ with regard to having children living at home.

Minorities

Reflecting continuing changes in the rate of participation of minorities in S&E education, the age distributions of scientists and engineers (defined by either degree or occupation) across racial/ethnic groups differ. About 34 percent of whites with an S&E degree or occupation were younger than age 40 in 1999, compared with between 38 and 52 percent of their Asian, black, Hispanic, or American Indian counterparts. (See appendix table 6-22.)

Figure 6-4
Spouse's employment status of married scientists and engineers, by sex: 1999



NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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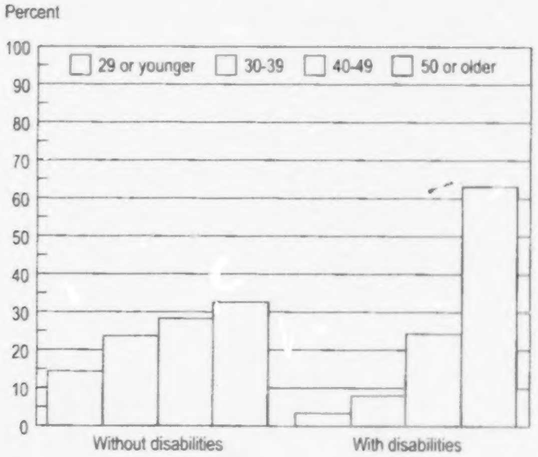
Persons with disabilities

Scientists and engineers (as defined by degree or occupation) with disabilities are older, on average, than those without disabilities. (See figure 6-5.) Only 12 percent of scientists and engineers with disabilities were younger than age 40 in 1999, compared with 38 percent of those without disabilities. Conversely, 64 percent of those with disabilities and 33 percent of those without were age 50 or older. (See appendix table 6-23.)

Figure 6-5

Age distribution of scientists and engineers, by disability status: 1999



NOTE: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Appendix A

Technical Notes

The data in this report come from many sources, including surveys conducted by the National Science Foundation (NSF) and other Federal agencies, and by non-Federal organizations. Many methods of data collection are represented, such as universe surveys, sample surveys, and compilations of administrative records. Users should thus take great care when comparing data from different sources. These data often will not be strictly comparable due—among other things—to differences in definitions, survey procedures, and phrasing of questions.

Survey accuracy is determined by the joint effects of sampling and nonsampling errors. In all of the surveys that are sources of data for this report, efforts are made to minimize these errors. Sampling errors arise because estimates based on a sample will differ from the figures that would have been obtained if a complete census had been taken.

All surveys, whether universe or sample, are also subject to nonsampling errors; these can arise from design, reporting, and processing errors as well as from errors due to faulty response or nonresponse. Nonsampling errors include respondent-based events, such as some respondents interpreting questions differently from other respondents; respondents making estimates rather than giving actual data; and respondents being unable or unwilling to provide complete, correct information. Errors can also arise during the processing of responses, such as recording and keying errors.

Reporting categories

This report draws on information from many sources. As a result, the data presented may not have been collected using comparable terminology or concepts. Efforts have been made to maintain consistency throughout this text, but in some data reporting, it has been necessary to use distinct terminology that does not match that used in other compilations. In other instances, the same terminology has been used throughout, even though the underlying concept differs from source to source, as is the case for disability status.

Racial/ethnic information

Data collection on and reporting of the race/ethnicity of individuals pose several challenges. First, both the naming of population subgroups and their definitions have changed over time. Second, many of the groups of particular interest are quite small, so it is difficult to measure them accurately without universe surveys. In some instances, sample surveys may not have been of sufficient scope to permit calculation of reliable racial/ethnic population estimates; consequently, results are not shown for all groups. The U.S. Bureau of the Census's Current Population Survey, for example, cannot provide data on American Indians. Data on this population are available from the decennial census. Third, it is easy to overlook or minimize heterogeneity within subgroups when only a single statistic is reported for a total racial/ethnic group. Fourth, data on race/ethnicity are often based on self-identification. These data are less reliable for certain racial/ethnic groups than for others. Data collected at two points in time indicate that self-identification of American Indians is much less reliable than self-identification of other racial/ethnic groups.[1]

Information about persons with disabilities

Data on persons with disabilities in S&E are seriously limited for several reasons. First, the operational definitions of disability vary and include a wide range of physical and mental conditions. Different sets of data have used different definitions and thus are not totally comparable. The Americans With Disabilities Act of 1990 (ADA) encouraged progress toward standard definitions. Under ADA, an individual is considered to have a disability if he or she has a physical or mental impairment that substantially limits one or more major life activities, has a record of such impairment, or is regarded as having such an impairment. ADA also contains definitions of specific disabilities.

Second, data about disabilities frequently are not included in comprehensive institutional records (e.g., in registrar records in institutions of higher education). If included at all in institutional records, such information is likely to be kept only in confidential files at an office responsible for providing special services to students. Institutions are unlikely to have information regarding any persons with disabilities who have *not* requested special services. In the case of elementary/secondary school programs receiving funds to provide special education, however, counts for the entire student population identified as having special needs are centrally available.

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[1] U.S. Bureau of Labor Statistics, *A Test of Methods for Collecting Racial and Ethnic Information* (Washington, DC: U.S. Department of Labor, 1995).

Third, information on persons with disabilities gathered from surveys is often obtained from self-reported responses. Typically, respondents are asked if they have a disability and to specify what kind of disability it is. Resulting data therefore reflect individual perceptions rather than objective measures.

An example—the attempt to provide estimates of the proportion of the undergraduate student population with disabilities—shows how these factors coalesce. Self-reported data from the undergraduate student population, queried on a survey to ascertain patterns of student financial aid, suggest that about 10 percent of this population has some disability. Estimates from population surveys of higher education institutions, in contrast, place the estimate much lower, between 1 and 5 percent. Whether this discrepancy is the result of self-perception, incomplete reporting, nonevident disabilities, or differing definitions is difficult to ascertain.

In the final analysis, although considerable information is available on persons with disabilities and their status in the educational system and in the S&E workforce, it is often not possible to compare the numbers of persons with disabilities from different sources.

Several sources are used in this report for data on persons with disabilities. They include four surveys conducted by the Department of Education's National Center for Education Statistics (NCES); the American Council on Education-University of California–Los Angeles Survey of the American Freshman: National Norms; NSF's Survey of Earned Doctorates (SED) and the three Scientists and Engineers Statistics Data System (SESTAT) surveys; and the U.S. Bureau of the Census's Survey of Income and Program Participation (SIPP). These sources are described in more detail later in this appendix; following is a brief description of how each survey treats the issue of disability.

- **NCES surveys.** Four NCES surveys collect information on disability—the National Education Longitudinal Study, Beginning Postsecondary Students Longitudinal Study, Baccalaureate and Beyond Study, and National Postsecondary Student Aid Study (NPSAS). Text table A-1 provides a quick comparison of the disability-related information collected by these surveys.
- **Survey of the American Freshman: National Norms.** The National Norms survey conducted by the American Council on Education and the University of California–Los Angeles asks if the student has a disability and, if so, whether the student has a disability such as hearing, speech, orthopedic, learning disability, health related, or other. The student is asked to mark all that apply.
- **NSF surveys.** The NSF surveys, the SED and the SESTAT surveys, provide individual respondents' answers. The SED asks if the respondent has a disability, then asks the respondent to mark what category applies to the disability. The SESTAT surveys ask the degree of difficulty—none, slight, moderate, severe, or unable to do—a person with a disability(ies) may have in performing life activities. Those respondents who answered moderate, severe, or unable to do for any activity were classified as disabled. Text table A-2 compares SED and SESTAT treatment of disability.
- **Survey of Income and Program Participation.** The disability supplements that have been asked in the Census Bureau's SIPP were designed to be consistent with the ADA definition of disability. The supplements obtain information on the ability to perform specific functional activities (seeing, hearing, having one's speech understood, lifting and carrying, climbing stairs, and walking); certain ADLs, or activities of daily living (getting around inside the home, getting in and out of a bed or chair, bathing, dressing, eating, and toileting), and certain IADLs, or instrumental activities of daily living (going outside the home, keeping track of money and bills, preparing meals, doing light housework, taking prescription medicines in the right amount at the right time, and using the telephone). The survey also collects information on the use of such special aids as wheelchairs and canes, the presence of certain conditions related to mental functioning, and the ability to work at a job or business.

In SIPP, people 15 years old and over were identified as having a disability if they met any of the following criteria:

- Used a wheelchair or were a long-term user of a cane, crutches, or a walker
- Had difficulty performing one or more functional activities (seeing, hearing, speaking, lifting/carrying, using stairs, or walking)
- Had difficulty with one or more activities of daily living
- Had difficulty with one or more instrumental activities of daily living (the IADLs included going outside the home, keeping track of money and bills, preparing meals, doing light housework, taking prescription medicines in the right amount at the right time, and using the telephone)

Text table A-1

Selected characteristics of NCES surveys with data about students with disabilities

Characteristic	National Education Longitudinal Study	Beginning Postsecondary Students Longitudinal Study	Baccalaureate and Beyond Study	National Postsecondary Student Aid Study
Survey year	1988	1990/94	1993/94	1996
Questionnaire respondent	Parent	Student	Student	Student
Question as asked in the survey	In your opinion, does your eighth grader have any of the following problems? -AND- Has your eighth grader ever received special services for any or all of the following?	Do you have any of the following conditions?	Do you have any of the following disabilities?	Do you have any disabilities, such as a hearing, speech, or mobility impairment, or vision problems that can't be corrected with glasses?
Disability type as categorized by the survey				
Visual impairment	Visual handicap (not correctable by glasses)	Visual handicap	Vision impairment that cannot be corrected with glasses, or are you legally blind?	Legally blind or have a vision impairment that cannot be corrected with glasses
Hearing impairment or deaf	Hearing problem -OR- deafness	Hard-of-hearing -OR- deafness	Hearing impairment	A hearing impairment
Speech impairment	Speech problem	Speech disability	Speech disability or limitation	A speech disability or limitation
Orthopedic impairment	Orthopedic problem (for example: club foot, absence of arm or leg, cerebral palsy, amputation, polio)	Orthopedic handicap	Orthopedic or mobility limitation	An orthopedic or mobility limitation
Learning disability	Specific learning problem (for example: dyslexia or other reading, writing, or math disability)	Specific learning disability	Specific learning disability	A specific learning disability
Other disability or impairment	Other health problem (includes mental retardation) -OR- emotional problem -OR- other physical disability	Other health impairment	Any other type of limitations, disabilities, or handicaps	Other health-related disability or limitation

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999-187 (Washington, DC, 1999), p. 6.

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Text table A-2

SED and SDR definitions of disability

SED	SESTAT surveys
Disability (mark all that apply)	Difficulty with physical functions (mark one choice for each)
Visual	SEEING words or letters in ordinary newsprint (with glasses/contact lenses if you usually wear them)
Auditory	HEARING what is normally said in conversation with another person (with a hearing aid, if you usually wear one)
Orthopedic	WALKING without human assistance or using stairs (mobility)
[No corresponding category in SED]	LIFTING or carrying something as heavy as 10 pounds, such as a bag of groceries
Vocal	[No corresponding category in SESTAT]
Other	[No corresponding category in SESTAT]

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- Had one or more specified conditions (a learning disability, mental retardation or another developmental disability, Alzheimer's disease, or some other type of mental or emotional condition)
- Were limited in their ability to do housework
- Were 16 to 67 years old and limited in their ability to work at a job or business
- Were receiving Federal benefits based on an inability to work

People age 15 and over were identified as having a severe disability if they were unable to perform one or more functional activities; needed personal assistance with an ADL or IADL; used a wheelchair; were a long-term user of a cane, crutches, or a walker; had a developmental disability or Alzheimer's disease; were unable to do housework; were receiving Federal disability benefits; or were 16 to 67 years old and unable to work at a job or business.

Primary data sources

Data from many sources are presented in this report. This section provides summary descriptions of major sources and information on the location of more detailed survey descriptions.

Primary NSF sources

The following sources from the National Science Foundation's Division of Science Resources Statistics (SRS) were used for data tables in this publication. Published data tables from these surveys may be accessed on the SRS website http://www.nsf.gov/sbe/srs. In addition, researchers may access data directly from the SESTAT or WebCASPAR database systems, which can also be accessed from the SRS website.

Survey of Earned Doctorates

The Survey of Earned Doctorates has been conducted annually since 1957 for the National Science Foundation, the U.S. Department of Education, the National Endowment for the Humanities, the National Institutes of Health, and the U.S. Department of Agriculture. This is a census survey of all recipients of research doctoral degrees such as the Ph.D. or D.Sc.; it excludes the recipients of first-professional degrees such as the J.D. or M.D. Therefore, SED data are restricted to research doctorates.

Data for the SED are collected directly from individual doctorate recipients contacted through graduate deans at all U.S. universities. The recipients are asked to provide information on the field and specialty of their degree as well as their personal educational history, selected demographic data, and information on their postgraduate work and study plans. Approximately 95 percent of the annual cohort of doctorate recipients respond to the questionnaire.

Partial data from public sources, such as field of study, are added to the file for nonrespondents. No imputations are made, however, for nonresponse for data not available elsewhere, such as race/ethnicity information. The data for a given year include all doctorates awarded in the 12-month period ending on June 30 of that year. Information on the SED can be found on the Web at http://www.nsf.gov/sbe/srs/ssed/start.htm.

Survey of Graduate Students and Postdoctorates in Science and Engineering

The data collected in the Survey of Graduate Students and Postdoctorates in Science and Engineering represent national estimates of graduate enrollment and postdoctoral employment at the beginning of the academic year in all academic institutions in the United States that offer doctorate or master's degree programs in any science or engineering field. Included are data for all branch campuses; affiliated research centers; and separately organized components such as medical or dental schools, schools of nursing, or schools of public health. In fall 1999, the survey universe consisted of 720 reporting units at 599 graduate institutions. Data are collected at the academic department level.

Available information includes full-time graduate students by source and mechanism of support, including data on women and first-year students enrolled full time, part-time graduate students by sex, and citizenship and racial/ethnic background of all graduate students. In addition, detailed data on postdoctorates are available by source of support, sex, and citizenship, including separate data on those holding first-professional doctorates in the health fields; summary information on other doctorate nonfaculty research personnel is also included.

NSF has collected data on graduate S&E enrollment and postdoctoral appointees since 1966. From fall 1966 through fall 1971, data from a limited number of doctorate-granting institutions were collected through the NSF Graduate Traineeship Program, which requested data only on those S&E fields supported by NSF. Beginning with the fall 1972 survey, this data collection effort was assigned to SRS's Universities and Nonprofit Institutions Studies Group. It was gradually expanded during the period 1972–75 to include additional S&E fields as well as all institutions known to have programs leading to the master's or doctorate degree. Because of this expansion, data for 1974 and earlier years are not strictly comparable with 1975 and later data. Information on the Graduate Student Survey can be found on the Web at http://www.nsf.gov/sbe/srs/sgss/start.htm.

SESTAT data system

In the 1990s, SRS redesigned its data system covering scientists and engineers. Termed SESTAT, the new data system integrates data from three SRS surveys—the Survey of Doctorate Recipients, the National Survey of College Graduates, and the National Survey of Recent College Graduates. The integration of the SESTAT surveys requires complementary sample populations and reference periods, matching survey questions, procedures, and field definitions, as well as weighting adjustments for any overlapping populations.

The surveys provide data on educational background, occupation, employment, and demographic characteristics. These surveys are of individuals and currently have a combined sample size of about 87,200, representing a population of about 13 million scientists and engineers. Each of the three surveys that makes up the SESTAT data system collects new data every 2 years. The data reported in this publication were collected in 1999.

SESTAT defines scientists and engineers as residents of the United States with a baccalaureate degree or higher who, as of the study's reference period, were not institutionalized, were age 75 or less, and were either educated as or working as a scientist or engineer. A baccalaureate or higher degree is a bachelor's, master's, doctorate, or professional degree. To meet the scientist or engineer requirement, the U.S. resident had to (1) have at least one baccalaureate or higher degree in an S&E field or (2) have a baccalaureate or higher degree in a non-S&E field but worked in a science or engineering occupation as of April 15, 1993. For the 1999 SESTAT surveys, the reference period was the week of April 15, 1999.

Some elements of SESTAT's desired target population were not included within the target populations of any of the three SESTAT component surveys in the 1990s. Bachelor's and master's level S&E educated personnel missing from the survey frames are predominately:

- U.S. residents as of the survey reference date whose bachelor's and/or master's degrees in S&E were received prior to April 1990 or from a foreign institution, who resided outside the United States on April 1, 1990, but not with the U.S. armed forces stationed abroad; or
- U.S. residents as of the survey reference date with no baccalaureate or higher degree in any field as of April 1, 1990, who were awarded a degree in S&E after June 1998 by a U.S. institution or after April 1990 by a foreign institution

Persons with at least a bachelor's degree who are working in S&E jobs, but have no degree in an S&E field, are underrepresented in the SESTAT database after 1993 because the surveys do not capture new people entering these occupations who were not educated in S&E fields in this decade.

Doctorate level S&E-trained personnel missing from the survey frames are predominately:

- U.S. residents as of the survey reference date with doctorates in S&E received after June 1998 or from a foreign institution, with no baccalaureate or higher degree in any field as of April 1, 1990, and no bachelor's or master's degree in S&E received from a U.S. institution between April 1, 1990, and June 1998; or
- U.S. residents as of the survey reference date with doctorates in S&E received after June 1998 or from a foreign institution but with no bachelor's or master's S&E degree received from a U.S. institution between April 1, 1990, and June 1998, who resided outside the United States on April 1, 1990, but not with the U.S. armed forces stationed abroad

SESTAT classifies the following broad categories as S&E occupations: computer and mathematical scientists, life and related scientists, physical and related scientists, social and related scientists, and engineers. Postsecondary teachers are included within each of these groups. The following are considered non-S&E occupations: top- and mid-level managers; teachers, except S&E postsecondary teachers; technicians/technologists, including computer programmers; people in health and related occupations, social services and related occupations, sales and marketing occupations, and other non-S&E occupations—for example, artists, broadcasters, editors, entertainers, public relations specialists, writers, clerical and administrative support personnel, farmers, foresters, lawyers, judges, librarians, archivists, curators, actuaries, food service personnel, historians (except science and technology), architects, construction tradespeople, mechanics and repairers, and those involved in precision/production occupations, operators (for example, machine set-up, machine operators and tenders, fabricators, assemblers) and related occupations, transportation/material moving occupations and protective and other service occupations. Information on SESTAT can be found on the Web at http://sestat.nsf.gov/.

Primary non-NSF sources

The following non-NSF sources were used for data tables in this report.

The Integrated Postsecondary Education Data System Survey: Fall Enrollment, Completions, and Institutional Characteristics

Contact: National Center for Education Statistics
U.S. Department of Education
1990 K Street, NW
Washington, DC 20006
(202) 502-7300
http://nces.ed.gov/ipeds/

The Integrated Postsecondary Education Data System (IPEDS) Survey began in 1986 as a supplement to and replacement for the Higher Education General Information Survey (HEGIS), which began in 1966. HEGIS annually surveyed institutions listed in the current NCES *Education Directory of Colleges and Universities*; IPEDS surveys all postsecondary institutions, including universities and colleges and the institutions that offer technical and vocational education. IPEDS consists of several integrated component surveys that obtain information on types of institutions where postsecondary education is available, student participants, programs offered and completed, and the human and financial resources involved in the delivery of postsecondary education. IPEDS include surveys of institutional characteristics, fall enrollment, completions, finance, and graduation rates.

The **IPEDS Institutional Characteristics Survey** provides the basis for the universe of institutions reported in the *Education Directory of Colleges and Universities*. The universe includes institutions that met certain accreditation criteria and offered at least a 1-year program of college-level studies leading toward a degree. Each fall, institutions listed in the previous year's directory are asked to update information on their school's characteristics.

The **IPEDS Completions Survey** replaces and extends the HEGIS Degrees and Other Formal Awards Conferred Survey. It is administered to a census of institutions offering degrees at the bachelor's degree level and above, 2-year institutions, and less-than-2-year institutions.

The **IPEDS Fall Enrollment Survey** replaces and extends the previous HEGIS surveys of enrollment in institutions of higher education.

National Assessment of Educational Progress

Contact: National Center for Education Statistics
U.S. Department of Education
1990 K Street, NW
Washington, DC 20006
(202) 502-7300
http://nces.ed.gov/NAEP/

The National Assessment of Educational Progress (NAEP) is sponsored by NCES and has been conducted since 1983 by the Educational Testing Service. The overall goal of the project is to determine the nation's progress in achievement in selected subject areas by elementary and secondary school students. Accordingly, NAEP encompasses a series of national sample surveys designed to assess students in subject areas such as reading, mathematics, science, writing, and history. Begun in 1969, NAEP has periodically surveyed the educational accomplishments of 9-, 13-, and 17-year-old students (and, in recent years, those in grades 4, 8, and 12 as well).

Since 1986, NAEP has included both main and long-term trend assessments. Both assessments use a complex multistage stratified sample of schools, selected to ensure adequate representation of schools with high enrollment of blacks and Hispanics. Both assessments historically excluded students with limited English proficiency and students receiving special education services whom school officials judged unable to respond meaningfully to the assessment.

Beginning with NAEP assessments in 1996, attempts were made to have more of the students who were classified as having severe mental or physical disabilities or limited English proficiency included in the assessment. Accommodations were implemented for students who would have been excluded in the past. Spanish-speaking students classified as with limited English proficiency were given the option of using a bilingual test booklet in mathematics in a portion of the sample. In addition, English-Spanish glossaries were provided at all three grades for designated science books. Other accommodations (such as earphones for the hearing impaired, signers for the deaf, magnifying equipment, and translators) were allowed if provided by the school and specified in the student's Individual Education Plan. Students who could not be accommodated either by the NAEP administrators or by their schools were excluded from the assessment. A study to determine the impact of the revised inclusion rules and accommodations was conducted in the 1996 assessment.

The main assessments estimate student achievement at a cross-sectional point in time. The cross-sectional samples use innovations in assessment methodology and population definition. In 1996, data were collected from approximately 35,000 students in grades 4, 8, and 12 for the science assessments and from approximately 33,000 students in grades 4, 8, and 12 for the mathematics assessments. Data were also collected from these students' principals and a sample of their teachers.

The long-term trend assessments estimate the current status of achievement using the same sampling and assessment methodology used in previous years. In 1999, data were collected from approximately 16,000 students ages 9, 13, and 17 for the long-term trend science and mathematics assessments.

Performance data are reported for the nation and for various subgroups categorized by variables such as region, sex, race/ethnicity, parental education, type of school, and type and size of community. Beginning with the 1990 assessment, three reporting levels were established for NAEP results: basic, proficient, and advanced. Since 1984, NAEP was conducted in some subject areas every other year in even-numbered years. Beginning in 1999, it has been conducted annually.

The National Postsecondary Student Aid Study

Contact: National Center for Education Statistics
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(202) 502-7300
http://nces.ed.gov/npsas/

The National Postsecondary Student Aid Study was established by NCES to collect information concerning financial aid allocated to students enrolled in U.S. postsecondary institutions. NPSAS was first administered in the fall of the 1986/87 academic year. NCES conducted subsequent cycles of NPSAS for the 1989/90, 1992/93, and 1995/96 school years. Estimates from the 1996 NPSAS sample are generally comparable to those from the 1993 and 1990 samples but not to those from the 1987 sample.

The 1995/96 survey gathered information from about 60,000 undergraduate and graduate students selected from registrar lists of enrollees at about 800 postsecondary institutions. The sample included students who did and did not receive financial aid, as well as students' parents. Student information, such as field of study, educational level, and attendance status (part or full time), was obtained from registrar records. Types and amounts of financial aid and family financial characteristics were abstracted from school financial aid records. Parents of students were also sampled to compile data concerning family composition and parental financial characteristics.

The Third International Mathematics and Science Study-Repeat

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The Third International Mathematics and Science Study-Repeat (TIMSS-R), conducted in 1999, provides information on U.S. progress toward the goal of being first in the world in mathematics and science achievement. Eighth-grade students in 38 countries participated in TIMSS-R. NCES and NSF provided the funding to carry out the U.S. participation in this large-scale assessment. The TIMSS-R instruments were designed to assess eighth-grade student achievement in mathematics and science. Additional information was collected through teacher, student, and school questionnaires. The teacher questionnaire asked about topics such as attitudes and beliefs about teaching and learning, teaching assignments, class size and organization, topics covered, the use of various teaching tools, instructional practices, and participation in professional development. The student questionnaire asked about daily activities, family attributes, educational resources in the home, attitudes and beliefs about learning, instructional processes in the classroom, and study habits and homework. The principal questionnaire concerned community attributes, personnel, teaching assignments, policy and budget responsibilities, curriculum, enrollment, behavioral problems, instructional organization, and mathematics and science courses offered. In the United States, a national probability sample was drawn that resulted in 221 schools and 9,072 students participating at the eighth-grade level.

Engineering Workforce Commission Survey of Engineering and Technology Enrollments

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For more than 30 years, the Engineering Workforce Commission (EWC) has conducted annual surveys of enrollments and degrees in engineering programs. EWC collected data on engineering enrollments and degrees in 1999 from 341 institutions, including all of those with curricula approved by the Accreditation Board for Engineering and Technology (ABET), as well as data on engineering technology from 280 schools. EWC counts the number of students studying for engineering degrees at all ABET-accredited engineering schools throughout the United States. Historically, EWC has also included schools that are not ABET accredited for a variety of reasons unique to each school. Some such schools are in the process of obtaining ABET accreditation; others have simply asked to be included in the survey. The response rate to the 1999 survey was 93 percent for ABET-accredited schools and 85 percent for non-ABET schools. Each year, EWC obtains data from all schools included in the previous year's survey so as to ensure accurate time-series comparisons.

Survey of Income and Program Participation

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The Survey of Income and Program Participation conducted by the Census Bureau provides information on the economic situation of households and persons in the United States. The survey collects data on basic social and demographic characteristics of persons in households, labor force activity, type and amount of income, participation status in various programs, and various supplementary modules—for example, work history, health characteristics (including disability), assets and liabilities, and education and training.

The 1996 panel of the SIPP provides the latest available data on the disability status of the noninstitutionalized population of the United States. A supplement containing an extensive set of questions about disability status was included as part of the fifth wave of the 1996 panel, which was fielded between August and November 1997. The total sample size for this study was approximately 32,000 interviewed households.

Sampling errors

Sampling errors occur when estimates are derived from a sample rather than from the entire population. The sample used for any particular survey is only one of a large number of possible samples of the same size and design that could have been selected. Even if the same questionnaire and instructions were used, the estimates from each sample would differ from the others. This difference, termed sampling error, occurs by chance, and its variability is measured by the standard error associated with a particular estimate.

The standard error of a sample survey estimate measures the precision with which an estimate from one sample approximates the true population value, and thus can be used to construct a confidence interval for a survey parameter to assess the accuracy of the estimate. Standard errors for the numbers in the appendix tables are provided where available. Tables A-1 through A-5 provide standard errors for tables in chapters 1 and 2. Tables A-6 through A-9 provide approximate standard errors for totals for different segments of the S&E population from the NSF SESTAT surveys. Information provided in tables A-10 through A-13 allows the user to calculate approximate standard errors for estimates derived from the NSF SESTAT surveys. The following formula can be used for estimating the standard error of totals:

$$SE(\hat{Y}) = [\hat{\beta}_0 \hat{Y}^2 + \hat{\beta}_1 \hat{Y}]^{1/2}$$

where $SE(\hat{Y})$ is the predicted standard error of the estimated total $\hat{Y}$ and $\hat{\beta}_0$ and $\hat{\beta}_1$ are the regression coefficients provided in tables A-10 through A-13. Approximate standard errors for percentages can be calculated from the following formula:

$$SE(\hat{P}) = \{ \hat{\beta}_1 / \hat{Y}[\hat{P}(100 - \hat{P})] \}^{1/2}$$

where $SE(\hat{P})$ is the predicted standard error for the percentage, $\hat{Y}$ is the estimated number of persons in the base of the percentage, and $\hat{\beta}_1$ is the regression coefficient provided in tables A-10 through A-13. A 95 percent confidence interval for an estimate can be calculated by multiplying 1.96 by the standard error of the estimate, and adding and subtracting the resulting amount from the estimate.

Appendix table A-1

Standard errors for appendix table 1-17: Percentage of 25- to 29-year-olds who had completed high school, by race/ethnicity and sex: 1990–99

Year	Total			White, non-Hispanic			Black, non-Hispanic			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1990	0.4	0.6	0.5	0.4	0.6	0.5	1.4	2.1	1.9	2.0	2.7	2.8
1991	0.4	0.6	0.5	0.4	0.6	0.5	1.4	1.9	1.9	2.0	2.8	2.9
1992	0.4	0.5	0.5	0.4	0.6	0.5	1.4	2.0	2.0	2.0	2.7	2.9
1993	0.4	0.6	0.5	0.4	0.6	0.5	1.4	1.9	2.0	1.9	2.6	2.8
1994	0.4	0.5	0.5	0.4	0.5	0.5	1.1	1.7	1.5	1.2	1.7	1.8
1995	0.4	0.5	0.5	0.3	0.5	0.5	1.0	1.5	1.5	1.3	1.7	1.8
1996	0.4	0.5	0.5	0.4	0.5	0.5	1.1	1.6	1.6	1.3	1.7	1.9
1997	0.4	0.5	0.5	0.3	0.5	0.5	1.1	1.7	1.4	1.2	1.7	1.8
1998	0.4	0.5	0.5	0.3	0.5	0.4	1.0	1.5	1.4	1.2	1.7	1.8
1999	0.4	0.6	0.5	0.4	0.5	0.5	1.0	1.5	1.4	1.2	1.7	1.8

SOURCE: U.S. Bureau of the Census, March Current Population Survey, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table A-2

Standard errors for appendix table 2-1: Percentage of 25- to 29-year-old high school completers with some college and percentage that completed college, by sex and race/ethnicity: 1990–2000

Year	Total			Whites, non-Hispanic			Blacks, non-Hispanic			Hispanics		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
	Percent with some college											
1990	0.6	0.8	0.8	0.7	1.0	0.9	2.0	2.9	2.7	2.6	3.6	3.6
1991	0.6	0.8	0.8	0.7	1.0	1.0	2.0	2.8	2.7	2.6	3.6	3.8
1992	0.6	0.9	0.8	0.7	1.0	1.0	2.0	2.9	2.8	2.6	3.5	3.8
1993	0.6	0.9	0.8	0.7	1.0	1.0	2.0	2.9	2.8	2.5	3.5	3.6
1994	0.6	0.8	0.8	0.6	0.9	0.9	1.7	2.5	2.3	1.6	2.2	2.4
1995	0.6	0.8	0.8	0.6	0.9	0.9	1.6	2.4	2.3	1.7	2.3	2.4
1996	0.6	0.8	0.8	0.7	0.9	0.9	1.7	2.6	2.4	1.7	2.3	2.5
1997	0.6	0.8	0.8	0.7	0.9	0.9	1.7	2.6	2.3	1.6	2.3	2.3
1998	0.6	0.8	0.8	0.7	1.0	0.9	1.7	2.5	2.3	1.6	2.2	2.3
1999	0.6	0.8	0.8	0.7	1.0	0.9	1.7	2.6	2.2	1.6	2.4	2.3
2000	0.6	0.8	0.8	0.7	1.0	0.9	1.7	2.7	2.3	1.6	2.3	2.2
	Percent that completed college											
1990	0.5	0.8	0.7	0.6	0.9	0.8	1.5	2.3	1.9	1.8	2.4	2.7
1991	0.5	0.8	0.7	0.6	0.9	0.9	1.3	2.0	1.8	2.0	2.6	3.0
1992	0.5	0.8	0.8	0.6	0.9	0.9	1.4	2.0	1.9	1.9	2.5	2.8
1993	0.5	0.8	0.8	0.6	0.9	0.9	1.5	2.1	2.1	1.7	2.3	2.6
1994	0.5	0.7	0.7	0.6	0.9	0.8	1.2	1.8	1.7	1.1	1.4	1.7
1995	0.5	0.7	0.7	0.6	0.9	0.9	1.3	1.9	1.7	1.2	1.6	1.8
1996	0.5	0.8	0.8	0.7	0.9	0.9	1.3	1.8	1.9	1.2	1.7	1.8
1997	0.6	0.8	0.8	0.7	0.9	0.9	1.3	1.8	1.8	1.2	1.7	1.9
1998	0.6	0.8	0.8	0.7	0.9	1.0	1.3	1.9	1.8	1.2	1.6	1.7
1999	0.6	0.8	0.8	0.7	1.0	1.0	1.3	1.9	1.8	1.2	1.6	1.7
2000	0.6	0.8	0.8	0.7	1.0	1.0	1.4	2.2	1.9	1.2	1.6	1.8

SOURCE: U.S. Bureau of the Cenus, March Current Population Survey, various years.

Appendix table A-3

Standard errors for appendix table 2-3: Percentage distribution of 1988 eighth graders, by high school completion status and postsecondary education enrollment, by disability status and type: 1994

Disability status and type	High school completion status			
	Enrolled in high school/working toward GED	Dropped out	High school diploma	GED or equivalent certificate
Total	0.32	0.48	0.71	0.46
Without disabilities	0.32	0.53	0.75	0.51
With disabilities	1.41	1.23	1.92	0.89
Visual impairment	5.05	1.22	5.97	3.78
Hearing impairment or deaf	4.14	1.78	5.12	3.72
Speech impairment	2.06	2.03	3.02	1.22
Orthopedic impairment	2.44	6.64	6.66	1.23
Learning disability	1.79	1.85	2.79	1.44
Other disability or impairment[a]	3.02	2.36	3.60	1.24

[a] Parent reported student had any other disability including health problems, emotional problems, mental retardation, or other physical disabilities and had received services for it.

NOTE: GED refers to passing the General Education Development exam.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999-187 (Washington, DC, 1999).

Appendix table A-4

Standard errors for appendix table 2-13: Percentage of undergraduates receiving various types of aid and average amount of aid received, by sex and race/ethnicity: Academic year 1995/96

Sex and race/ethnicity	Any aid	Grants	Loans	Work-study	Other
Male	1.0	0.8	0.7	0.3	0.4
Female	0.9	0.8	0.7	0.3	0.4
White, non-Hispanic	0.8	0.7	0.6	0.3	0.4
Asian/Pacific Islander	1.9	1.8	1.4	0.7	0.7
Black, non-Hispanic	1.9	1.7	1.7	0.6	0.9
Hispanic	2.1	2.0	1.6	0.9	0.6
American Indian/Alaskan Native	4.6	4.5	3.7	1.4	3.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table A-5

Standard errors for appendix table 2-14: Percentage distribution of 1989/90 beginning postsecondary students seeking bachelor's degrees, by persistence toward and completion of bachelor's and other degrees, by sex and race/ethnicity: Spring 1994

Sex and race/ethnicity	Completed a degree			Still enrolled for bachelor's[b]	No degree, no longer enrolled toward bachelor's[c]
	Bachelor's	Associate's[a]	Certificate[a]		
Male	1.7	1.0	0.7	1.5	1.7
Female	1.9	1.3	0.8	1.2	1.6
White, non-Hispanic	1.6	1.0	0.6	1.0	1.3
Asian/Pacific Islander	6.0	3.1	0.6	4.8	6.4
Black, non-Hispanic	3.3	3.1	1.2	2.8	4.1
Hispanic	4.8	2.2	3.3	4.6	5.5
American Indian/Alaskan Native	S	S	S	S	S

S data suppressed for reasons of confidentiality and/or data reliability

[a] Includes only students who are no longer working toward a bachelor's degree but who have completed another type of degree or award.

[b] Includes students who have completed another type of degree or award but are still working toward a bachelor's degree.

[c] Includes students who are no longer enrolled and students who are still enrolled but no longer working toward a bachelor's degree.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 1998*, NCES 98-013 (Washington, DC: U.S. Government Printing Office, 1998), supplemental table 12-1.

Women, Minorities and Persons With Disabilities in Science and Engineering: 2002

Appendix table A-6

Approximate standard errors for scientists and engineers in 1999 (total population)

Estimated number	Total	Male	Female	White	Nonwhite
100	175	168	172	178	132
200	248	237	244	251	186
500	392	375	385	397	294
750	480	460	472	486	360
1,000	555	531	545	561	416
2,000	784	750	771	794	588
3,000	961	919	944	972	721
4,000	1,109	1,061	1,090	1,123	832
5,000	1,240	1,186	1,218	1,255	930
10,000	1,754	1,677	1,722	1,775	1,314
25,000	2,771	2,650	2,719	2,804	2,072
50,000	3,915	3,742	3,836	3,961	2,919
100,000	5,527	5,278	5,400	5,590	4,092
250,000	8,690	8,276	8,417	8,781	6,301
500,000	12,174	11,540	11,612	12,281	8,495
750,000	14,767	13,930	13,855	14,871	9,869
1,000,000	16,885	15,846	15,564	16,973	10,742
2,000,000	22,912	21,003	19,360	22,844	10,725
3,000,000	26,824	23,877	19,9[illegible]	26,483	na
4,000,000	29,475	25,258	17,633	28,749	na
5,000,000	31,190	25,393	10,698	29,957	na
6,000,000	32,117	24,302	na	30,232	na
7,000,000	32,326	21,801	na	29,602	na
8,000,000	31,830	17,289	na	28,004	na
9,000,000	30,595	7,842	na	25,257	na
10,000,000	28,525	na	na	20,912	na
11,000,000	25,417	na	na	13,506	na
12,000,000	20,811	na	na	na	na

na not applicable

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table A-7
Approximate standard errors for bachelor's scientists and engineers in 1999

Estimated number	Total	Male	Female	White	Nonwhite
100	186	183	179	191	138
200	263	258	254	270	196
500	416	409	401	426	309
750	509	500	491	522	379
1,000	588	578	567	603	437
2,000	832	817	802	853	618
3,000	1,018	1,001	982	1,044	757
4,000	1,176	1,155	1,134	1,206	874
5,000	1,315	1,292	1,268	1,348	977
10,000	1,859	1,826	1,792	1,906	1,380
25,000	2,937	2,885	2,829	3,012	2,177
50,000	4,150	4,073	3,989	4,254	3,065
100,000	5,858	5,743	5,610	6,004	4,298
250,000	9,209	8,998	8,716	9,431	6,615
500,000	12,898	12,528	11,953	13,192	8,915
750,000	15,640	15,098	14,169	15,975	10,351
1,000,000	17,878	17,146	15,799	18,235	11,259
2,000,000	24,227	22,545	18,831	24,554	11,169
3,000,000	28,320	25,356	17,747	28,481	na
4,000,000	31,061	26,418	11,433	30,941	na
5,000,000	32,791	25,946	na	32,271	na
6,000,000	33,667	23,851	na	32,609	na
7,000,000	33,755	19,617	na	31,988	na
8,000,000	33,061	11,006	na	30,347	na
9,000,000	31,533	na	na	27,506	na
10,000,000	29,042	na	na	23,024	na
11,000,000	25,302	na	na	15,540	na
12,000,000	19,613	na	na	na	na

na not applicable

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table A-8

Approximate standard errors for master's scientists and engineers in 1999

Estimated number	Total	Male	Female	White	Nonwhite
100	168	161	179	177	137
200	237	228	252	251	193
500	375	360	399	396	305
750	459	441	489	485	374
1,000	530	509	564	560	432
2,000	749	720	798	793	610
3,000	918	882	977	971	747
4,000	1,060	1,019	1,129	1,121	863
5,000	1,185	1,139	1,262	1,253	964
10,000	1,675	1,610	1,783	1,772	1,363
25,000	2,648	2,543	2,815	2,801	2,149
50,000	3,741	3,590	3,971	3,959	3,026
100,000	5,283	5,059	5,587	5,592	4,242
250,000	8,316	7,912	8,696	8,813	6,526
500,000	11,670	10,983	11,965	12,396	8,786
750,000	14,181	13,194	14,234	15,099	10,188
1,000,000	16,246	14,932	15,937	17,337	11,064
2,000,000	22,228	19,308	19,460	23,962	10,816
3,000,000	26,277	21,201	19,341	28,649	na
4,000,000	29,208	21,284	15,497	32,255	na
5,000,000	31,336	19,580	na	35,114	na
6,000,000	32,817	15,512	na	37,397	na
7,000,000	33,738	4,970	na	39,207	na
8,000,000	34,144	na	na	40,605	na
9,000,000	34,052	na	na	41,634	na
10,000,000	33,459	na	na	42,320	na
11,000,000	32,337	na	na	42,681	na
12,000,000	30,628	na	na	42,723	na

na not applicable

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table A-9

Approximate standard errors for doctoral scientists and engineers in 1999

Estimated number	Total	Male	Female	White	Nonwhite
100	99	97	94	104	85
200	139	137	133	146	121
500	220	217	210	232	191
750	270	266	258	284	234
1,000	312	307	298	327	270
2,000	441	434	421	463	381
3,000	539	532	515	567	466
4,000	623	614	595	655	538
5,000	696	686	665	732	601
10000	984	969	939	1,034	845
25,000	1,554	1,525	1,478	1,631	1,315
50000	2,192	2,141	2,074	2,296	1,807
100,000	3,084	2,982	2,890	3,218	2,401
250,000	4,799	4,490	4,355	4,950	2,945
500,000	6,603	5,780	5,619	6,660	na
750,000	7,856	6,305	6,149	7,718	na
1,000,000	8,795	6,259	6,138	8,374	na
2,000,000	10,737	na	na	8,120	na
3,000,000	10,668	na	na	na	na
4,000,000	8,539	na	na	na	na

na not applicable

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT)

Appendix table A-10

Scientists and engineers in 1999 (total population): β_0 and β_1 parameters for specified demographic groups

Degree field and occupation	Parameter	Total	Male	Female	White	Nonwhite
All scientists and engineers	β_0	-0.00002	0.00003	0.00005	-0.00003	-0.00006
	β_1	307.74838	281.62859	297.07774	315.22684	173.25637
Field of highest degree						
Computer/mathematical sciences	β_0	-0.00014	-0.00021	0.00040	0.00022	0.00021
	β_1	238.30346	250.50661	225.56489	281.30536	151.88338
Life sciences	β_0	-0.00010	0.00019	-0.00030	-0.00013	-0.00029
	β_1	263.04618	276.56190	297.08279	274.29995	162.97016
Physical sciences	β_0	-0.00013	0.00020	-0.00040	-0.00017	-0.00045
	β_1	191.05037	211.65869	171.46532	217.56020	121.16321
Social sciences	β_0	0.00006	0.00014	0.00013	-0.00008	-0.00010
	β_1	391.98517	394.61136	350.07506	410.02192	218.30068
Engineering	β_0	-0.00003	0.00005	-0.00009	-0.00006	-0.00014
	β_1	173.72197	184.19018	114.07917	205.42315	122.67385
Non-S&E	β_0	-0.00002	0.00007	-0.00003	-0.00002	0.00019
	β_1	362.78298	349.15063	352.27621	398.80013	229.68120
Occupation						
Computer/mathematical scientist	β_0	-0.00001	0.00003	-0.00022	0.00003	-0.00022
	β_1	222.17067	225.58645	263.81063	248.07716	164.28594
Life scientist	β_0	0.00002	-0.00011	-0.00003	-0.00004	0.00005
	β_1	162.64087	152.08679	193.12466	185.56071	97.13051
Physical scientist	β_0	-0.00006	-0.00006	-0.00018	0.00007	0.00030
	β_1	145.22370	136.95987	150.84816	153.65366	103.17917
Social scientist	β_0	0.00001	-0.00027	0.00007	-0.00004	-0.00030
	β_1	189.71994	208.67765	213.72394	191.99128	135.74938
Engineer	β_0	0.00002	0.00004	0.00034	0.00004	-0.00011
	β_1	190.69903	197.17445	156.12924	188.37016	122.96701
Non-S&E occupation	β_0	-0.00003	-0.00005	0.00008	-0.00004	-0.00010
	β_1	372.56391	366.62209	360.48018	388.08396	203.79014

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table A-11

Bachelor's scientists and engineers in 1999: $ß_0$ and $ß_1$ parameters for specified demographic groups

Degree field and occupation	Parameter	Total	Male	Female	White	Nonwhite
All bachelor's scientists and engineers	$ß_0$	-0.00003	-0.00004	-0.00007	-0.00003	-0.00006
	$ß_1$	345.76312	333.81569	321.92498	363.55902	191.13484
Field of highest degree						
Computer/mathematical sciences	$ß_0$	-0.00023	-0.00041	-0.00055	-0.00031	-0.00061
	$ß_1$	277.47804	300.98507	239.70050	294.67208	192.93481
Life sciences	$ß_0$	-0.00017	-0.00034	-0.00045	-0.00022	-0.00050
	$ß_1$	322.31076	339.91860	355.23811	342.76698	198.01218
Physical sciences	$ß_0$	-0.00036	-0.00059	-0.00073	-0.00045	-0.00104
	$ß_1$	270.32685	312.30207	219.66166	291.16354	170.87214
Social sciences	$ß_0$	-0.00008	-0.00020	-0.00015	-0.00010	-0.00017
	$ß_1$	431.44041	465.09638	367.37615	458.98435	238.39416
Engineering	$ß_0$	-0.00007	-0.00009	-0.00027	-0.00010	-0.00040
	$ß_1$	200.65872	214.80459	137.43830	228.21721	158.48280
Non-S&E	$ß_0$	-0.00038	-0.00042	-0.00048	-0.00038	-0.00004
	$ß_1$	356.29880	326.05010	392.44659	377.09712	182.68328
Occupation						
Computer/mathematical scientist	$ß_0$	0.00006	0.00016	-0.00050	0.00009	-0.00027
	$ß_1$	247.69805	260.97694	299.01424	248.49673	196.36168
Life scientist	$ß_0$	-0.00041	-0.00064	-0.00053	-0.00033	-0.00423
	$ß_1$	267.62855	282.96504	230.79496	277.87158	200.97213
Physical scientist	$ß_0$	0.00018	0.00028	-0.00161	0.00009	-0.00214
	$ß_1$	200.91399	220.12543	174.59927	223.17370	172.67648
Social scientist	$ß_0$	-0.00012	0.00028	-0.00209	0.00024	-0.00813
	$ß_1$	391.59005	329.92357	374.54928	409.08087	229.92383
Engineer	$ß_0$	0.00002	0.00003	-0.00089	0.00005	-0.00020
	$ß_1$	212.33234	218.63238	175.40824	199.92285	158.09250
Non-S&E occupation	$ß_0$	-0.00003	-0.00002	-0.00011	-0.00004	-0.00005
	$ß_1$	413.80692	397.18491	351.06926	444.24003	216.79169

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Appendix table A-12

Master's scientists and engineers in 1999: β_0 and β_1 parameters for specified demographic groups

Degree field and occupation	Parameter	Total	Male	Female	White	Nonwhite
All master's scientists and engineers	β_0	-0.00002	-0.00004	-0.00006	-0.00001	-0.00006
	β_1	280.81808	259.55041	318.64128	314.08432	186.33419
Field of highest degree						
Computer/mathematical sciences	β_0	-0.00051	-0.00066	-0.00180	-0.00108	-0.00023
	β_1	229.98609	225.03016	226.95922	316.13836	102.25294
Life sciences	β_0	-0.00076	-0.00159	-0.00086	-0.00092	-0.00104
	β_1	248.75495	257.14653	170.81826	273.86726	122.38972
Physical sciences	β_0	-0.00101	-0.00116	-0.00285	-0.00135	-0.00048
	β_1	204.79070	195.57067	197.51872	236.19915	105.83538
Social sciences	β_0	-0.00017	-0.00041	-0.00030	-0.00022	-0.00053
	β_1	222.66632	253.44483	213.49174	247.12989	127.55022
Engineering	β_0	-0.00020	-0.00023	-0.00065	-0.00031	-0.00017
	β_1	155.09404	160.56347	95.92828	192.63307	99.26671
Non-S&E	β_0	0.00000	0.00000	-0.00010	0.00000	-0.00026
	β_1	327.08060	298.66567	393.91455	382.99428	238.20534
Occupation						
Computer/mathematical scientist	β_0	-0.00026	-0.00017	-0.00066	-0.00032	-0.00022
	β_1	228.95490	191.32276	225.56785	294.06459	124.69842
Life scientist	β_0	-0.00093	-0.00255	0.00028	-0.00124	-0.00169
	β_1	217.07815	234.96015	204.61524	263.42916	115.99420
Physical scientist	β_0	-0.00068	-0.00046	0.00147	-0.00113	-0.00186
	β_1	175.23600	152.43634	198.43957	193.23003	103.11800
Social scientist	β_0	-0.00041	-0.00025	-0.00079	-0.00066	-0.00158
	β_1	251.97446	292.67170	236.59249	264.01161	169.67809
Engineer	β_0	-0.00012	-0.00010	-0.00089	-0.00005	-0.00028
	β_1	148.28276	148.01961	139.50388	164.43166	104.69653
Non-S&E occupation	β_0	-0.00003	-0.00011	-0.00004	-0.00003	-0.00007
	β_1	373.39630	349.62567	374.43773	410.55657	211.50237

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table A-13

Doctoral scientists and engineers in 1999: β_0 and β_1 parameters for specified demographic groups

Degree field and occupation	Parameter	Total	Male	Female	White	Nonwhite
All doctoral scientists and engineers	β_0	-0.00002	-0.00006	-0.00005	-0.00004	-0.00015
	β_1	97.06564	94.44642	88.59845	107.29630	72.96765
Field of highest degree						
Computer/mathematical sciences	β_0	-0.00028	-0.00037	-0.00179	-0.00052	-0.00077
	β_1	37.62834	41.62298	27.24175	44.38081	32.07953
Life sciences	β_0	-0.00010	-0.00016	-0.00036	-0.00009	-0.00037
	β_1	32.56587	34.01286	44.64157	31.20354	40.15677
Physical sciences	β_0	-0.00014	-0.00014	-0.00039	-0.00010	-0.00054
	β_1	33.70681	32.82507	32.26803	36.01126	37.70068
Social sciences	β_0	-0.00010	-0.00017	-0.00018	-0.00011	-0.00039
	β_1	29.98008	32.29567	25.01193	29.31617	26.69858
Engineering	β_0	-0.00012	-0.00012	-0.00156	-0.00022	-0.00004
	β_1	28.61567	29.07171	26.60105	32.84335	25.55628
Non-S&E	β_0	-0.00072	-0.00173	-0.00232	-0.00095	-0.00332
	β_1	373.32905	421.22256	303.58250	408.92508	249.95700
Occupation						
Computer/mathematical scientist	β_0	-0.00024	-0.00046	-0.00115	-0.00030	-0.00080
	β_1	53.37508	58.66742	68.91037	63.31541	35.09954
Life scientist	β_0	-0.00009	-0.00015	0.00008	-0.00009	-0.00031
	β_1	37.65423	37.61122	43.76323	36.29873	38.57734
Physical scientist	β_0	-0.00013	-0.00009	-0.00066	-0.00024	-0.00021
	β_1	36.16038	34.36691	41.93698	38.15836	39.51903
Social scientist	β_0	0.00010	0.00029	-0.00024	0.00008	-0.00068
	β_1	64.45554	82.28238	51.60141	62.99938	54.08267
Engineer	β_0	-0.00010	-0.00009	-0.00154	-0.00009	0.00008
	β_1	33.29740	34.74466	27.23506	29.48511	34.03765
Non-S&E occupation	β_0	-0.00011	-0.00028	-0.00017	-0.00020	-0.00064
	β_1	182.29262	190.08102	166.29516	201.24602	134.47307

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation during the 1990s SESTAT surveys. "White" excludes persons of Hispanic origin, who are instead included in the "nonwhite" category.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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Appendix B

Related Reports from NSF

Academic Employment of Recent Science and Engineering Doctorate Holders. NSF 01-332. Arlington, VA, 2001.

Characteristics of Doctoral Scientists and Engineers in the United States: 1997. NSF 00-308. Arlington, VA, 2000.

Characteristics of Doctoral Scientists and Engineers in the United States: 1999. Early release tables. http://www.nsf.gov/sbe/srs/srs01406/start.htm. Arlington, VA, 2001.

Characteristics of Recent Science and Engineering Graduates: 1999. Early release tables. http://www.nsf.gov/sbe/srs/srs01404/start.htm. Arlington, VA, 2001.

Doubling Up: A Profile of U.S. Scientists and Engineers Who Hold Second Jobs. NSF 01-322. Arlington, VA, 2001.

Graduate Enrollment in Science and Engineering Increases for the First Time Since 1993. NSF 01-312. Arlington, VA, 2001.

Graduate Students and Postdoctorates in Science and Engineering: Fall 1999. NSF 01-315. Arlington, VA, 2001.

Human Resource Contributions to U.S. Science and Engineering From China. NSF 01-311. Arlington, VA, 2001.

Modes of Financial Support in the Graduate Education of Science and Engineering Doctorate Recipients. NSF 00-319. Arlington, VA, 2000.

Science and Engineering Degrees: 1966–98. NSF 01-325. Arlington, VA, 2001.

Science and Engineering Degrees, by Race/Ethnicity of Recipients: 1990–98. NSF 01-327. Arlington, VA, 2001.

Science and Engineering Doctorate Awards: 1999. NSF 01-314. Arlington, VA, 2001.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2000. NSF 00-327. Arlington, VA, 2000.

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Appendix table 1-1

Percentage of high school graduates taking selected mathematics and science courses in high school, by sex: 1990, 1994, and 1998

Course	1990			1994			1998		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Mathematics									
Geometry	63.2	62.1	64.2	70.0	64.3	72.2	75.1	73.7	77.3
Algebra II	52.9	51.0	54.6	61.1	57.7	61.6	61.7	59.8	63.7
Trigonometry	9.6	9.8	9.4	11.7	11.1	12.3	8.9	8.2	9.7
Precalculus	13.4	14.0	12.8	17.3	16.3	18.3	23.1	23.0	22.9
Calculus	6.5	7.5	5.6	9.3	9.5	9.1	11.0	11.2	10.6
Science									
Biology	90.9	89.4	92.3	93.2	91.8	94.5	92.7	91.4	94.1
AP/honors biology	10.1	9.4	10.8	11.9	10.9	12.8	16.2	14.5	18.0
Chemistry	48.9	47.7	50.0	55.8	52.9	58.5	60.4	57.1	63.5
Physics	21.5	25.4	18.0	24.5	27.0	22.2	28.8	31.7	26.2
Engineering	4.2	4.4	4.1	4.5	3.9	5.0	6.7	7.1	6.5

NOTES: Numbers have been revised from previously published figures. These data only report the percentage of students who earned credit in each course while in high school and do not count those students who took these courses prior to entering high school. Included in the totals but not shown separately are graduates whose sex was not reported.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Transcript Study, 1990, 1994, and 1998

Appendix table 1-2

Percentage of high school graduates taking selected mathematics and science courses in high school, by race/ethnicity: 1990, 1994, and 1998

Course	1990					1994					1998				
	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native	White	Black	Hispanic	Asian/ Pacific Islander	American Indian/ Alaskan Native
Mathematics															
Geometry	65.5	55.8	53.2	70.7	54.8	72.4	58.1	68.8	75.7	60.0	77.7	72.5	62.3	75.9	57.2
Algebra II	53.1	40.6	35.1	60.9	47.1	61.6	43.9	49.6	66.2	42.2	64.6	55.6	48.3	70.1	46.6
Trigonometry	10.0	6.2	7.6	21.2	10.7	13.3	7.2	7.2	15.8	5.3	10.0	4.8	5.6	11.7	5.5
Analysis/precalculus	14.8	6.1	7.2	25.3	7.5	18.2	9.7	13.7	33.7	8.7	25.0	13.8	15.3	41.3	16.4
Calculus	6.9	2.7	3.8	18.5	4.1	9.6	3.8	6.0	23.6	3.8	12.1	6.6	6.2	18.4	6.2
Science															
Biology	91.3	91.1	90.1	90.4	89.4	94.3	91.8	93.7	91.5	91.8	93.7	92.8	86.5	92.9	91.3
AP/honors biology	10.5	7.7	6.7	13.4	3.8	12.5	7.7	11.0	18.2	6.2	16.7	15.4	12.6	22.2	6.0
Chemistry	51.4	40.0	38.1	63.6	34.9	58.4	43.7	45.9	69.2	41.3	63.2	54.3	46.1	72.4	46.9
Physics	23.1	14.5	13.2	38.4	14.5	26.3	14.9	16.1	44.4	10.3	30.7	21.4	18.9	46.4	16.2
Engineering	4.8	1.4	0.8	3.4	3.2	4.6	3.8	3.3	3.2	2.2	7.9	4.8	2.3	5.2	9.6

NOTE: Numbers have been revised from previously published figures. These data only report the percentage of students who earned credit in each course while in high school and do not count those students who took these courses prior to entering high school.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Transcript Study, 1990, 1994, and 1998.

Appendix table 1-3

Average total units completed by the 12th grade in high school mathematics and science, and average grades received in mathematics and science, by disability status: 1992

Disability status	Average mathematics units	Average science units	Average high school grade in mathematics	Average high school grade in science
Without disabilities	2.9	2.7	7.63	7.43
With disabilities	2.4	2.2	8.37	8.32
Multiple disabilities	2.5	1.9	8.27	8.70
Learning disability	2.3	2.1	8.51	8.60
Health problems	2.4	2.1	8.07	8.06
Physical or emotional problems	2.6	2.1	8.26	8.25
Physical problems	2.6	2.3	7.98	7.89
Emotional problems	2.5	1.8	8.67	8.92
Sensory	2.4	2.2	8.12	8.08

NOTES: Students' disability status was reported by a parent. High school credit units in mathematics and science are as reported on students' high school transcripts. Grade average is based on a 1–13 scale, where 1.0 = A+ and 13 = F. Students represent those who were in 8th grade in a U.S. school in 1988 and were in 12th grade in 1992.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Profiles of Students With Disabilities as Identified in NELS:88*, NCES 97-254 (Washington, DC, 1997).

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 1-4

Number and percentage distribution of students who took AP examinations, by examination subject, sex, and race/ethnicity: 2000

Race/ethnicity	All AP exams			Biology			Chemistry			Calculus AB			Calculus BC		
	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females
	Number														
All students	747,922	332,731	415,191	85,215	35,917	49,298	51,293	28,758	22,535	133,516	70,479	63,037	33,668	20,769	12,899
White	504,600	229,635	274,965	56,884	23,888	32,996	33,486	19,330	14,156	92,848	49,931	42,917	21,359	13,528	7,831
Asian/Asian American	85,756	40,270	45,486	13,785	6,212	7,573	10,255	5,509	4,746	20,280	10,204	10,076	8,506	4,912	3,594
Black/African American	36,158	12,539	23,619	3,859	1,180	2,679	1,850	786	1,064	5,480	2,311	3,169	614	323	291
Hispanic	74,852	29,133	45,719	5,104	2,100	3,004	2,480	1,336	1,144	7,617	4,030	3,587	1,136	720	416
Chicano/Mexican American	39,799	15,443	24,356	2,426	1,023	1,403	1,205	633	572	4,145	2,212	1,933	457	287	170
Puerto Rican	5,208	2,076	3,132	453	184	269	226	129	97	566	297	269	88	57	31
Other Hispanic	29,845	11,614	18,231	2,225	893	1,332	1,049	574	475	2,906	1,521	1,385	591	376	215
American Indian/Alaskan Native	3,584	1,618	1,966	336	158	178	235	122	113	495	289	206	97	62	35
Other	25,475	11,513	13,962	3,271	1,478	1,793	1,841	1,010	831	4,144	2,269	1,875	1,183	739	444
Not stated	17,497	8,023	9,474	1,976	901	1,075	1,146	665	481	2,652	1,445	1,207	773	485	288
	Percent														
All students	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White	67.5	69.0	66.2	66.8	66.5	66.9	65.3	67.2	62.8	69.5	70.8	68.1	63.4	65.1	60.7
Asian/Asian American	11.5	12.1	11.0	16.2	17.3	15.4	20.0	19.2	21.1	15.2	14.5	16.0	25.3	23.7	27.9
Black/African American	4.8	3.8	5.7	4.5	3.3	5.4	3.6	2.7	4.7	4.1	3.3	5.0	1.8	1.6	2.3
Hispanic	10.0	8.8	11.0	6.0	5.8	6.1	4.8	4.6	5.1	5.7	5.7	5.7	3.4	3.5	3.2
Chicano/Mexican American	5.3	4.6	5.9	2.8	2.8	2.8	2.3	2.2	2.5	3.1	3.1	3.1	1.4	1.4	1.3
Puerto Rican	0.7	0.6	0.8	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2
Other Hispanic	4.0	3.5	4.4	2.6	2.5	2.7	2.0	2.0	2.1	2.2	2.2	2.2	1.8	1.8	1.7
American Indian/Alaskan Native	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3
Other	3.4	3.5	3.4	3.8	4.1	3.6	3.6	3.5	3.7	3.1	3.2	3.0	3.5	3.6	3.4
Not stated	2.3	2.4	2.3	2.3	2.5	2.2	2.2	2.3	2.1	2.0	2.1	1.9	2.3	2.3	2.2

SOURCE: The College Board, *AP 2000 National Summary Reports*, http://www.collegeboard.com/ap/2000/national_2000.pdf

Appendix table 1-5

Average mathematics and science scale scores in grades 4, 8, and 12, by sex and race/ethnicity: 2000

Grade and race/ethnicity	Mathematics		Science	
	Average scale score	Standard error	Average scale score	Standard error
Grade 4, all students	228	0.9	150	0.7
Male	229	1.0	153	0.8
Female	226	0.9	147	0.8
White	236	0.1	160	0.8
Black	205	1.6	124	1.6
Hispanic	212	1.5	129	1.3
Asian/Pacific Islander	NA	NA	NA	NA
American Indian/Alaskan Native	216	2.1	140	2.8
Grade 8, all students	275	0.8	151	0.6
Male	277	0.9	154	0.7
Female	274	0.9	147	0.8
White	286	0.8	162	0.7
Black	247	1.4	122	1.3
Hispanic	253	1.5	128	1.3
Asian/Pacific Islander	289	3.4	156	2.4
American Indian/Alaskan Native	255	8.3	134	3.2
Grade 12, all students	301	0.9	147	1.0
Male	303	1.1	148	1.1
Female	299	0.9	145	1.0
White	308	1.0	154	1.2
Black	274	1.9	123	1.4
Hispanic	283	2.1	128	1.9
Asian/Pacific Islander	319	2.8	153	2.5
American Indian/Alaskan Native	293	4.4	139	3.6

NA not available

NOTES: Mathematics scale scores range from 0 to 500 across all three grades; science scale scores range from 0 to 300 for each grade.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 2000 Mathematics Assessment, 2000 Science Assessment, http://www.nces.ed.gov/nationsreportcard/naepdata/.

Appendix table 1-6

Percentage attaining mathematics proficiency levels on the National Assessment of Educational Progress for grades 4, 8, and 12, by sex and race/ethnicity: 2000

Grade and race/ethnicity	Advanced	At or above proficient	At or above basic	Below basic
Grade 4, all students	3	26	69	31
Male	3	28	70	30
Female	2	24	68	32
White	3	34	80	20
Black	—	5	39	61
Hispanic	1	10	48	52
Asian/Pacific Islander	NA	NA	NA	NA
American Indian/Alaskan Native	1	14	53	47
Grade 8, all students	5	27	66	34
Male	6	29	67	33
Female	4	25	65	35
White	7	35	77	23
Black	—	6	32	68
Hispanic	1	10	41	59
Asian/Pacific Islander	12	40	76	24
American Indian/Alaskan Native	—	9	42	58
Grade 12, all students	2	17	65	35
Male	0	20	66	34
Female	1	14	64	36
White	3	20	74	26
Black	—	3	31	69
Hispanic	—	4	44	56
Asian/Pacific Islander	7	34	80	20
American Indian/Alaskan Native	—	10	57	43

— less than 0.5

NA not available

NOTES: Standard errors are included in source publication.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Nation's Report Card: Mathematics 2000*, NCES 2001-517 (Washington, DC, 2001).

Appendix table 1-7

Trends in average mathematics scale scores by age, sex, and race/ethnicity: 1990–99

Age, sex, and race/ethnicity	1990	1992	1994	1996	1999
Age 9, total	230	230	231	231	232
Male	229	231	232	233	233
Female	230	228	230	229	231
White	235	235	237	237	239
Black	208	208	212	212	211
Hispanic	214	212	210	215	213
Age 13, total	270	273	274	274	276
Male	271	274	276	276	277
Female	270	272	273	272	274
White	276	279	281	281	283
Black	249	250	252	252	251
Hispanic	255	259	256	256	259
Age 17, total	305	307	306	307	308
Male	306	309	309	310	310
Female	303	305	304	305	307
White	309	312	312	313	315
Black	289	286	286	286	283
Hispanic	284	292	291	292	293

NOTES: Other racial/ethnic groups are not reported, as the samples were of insufficient size to analyze and report separately. Standard errors are included in the source publication.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Results Over Time—NAEP 1999 Long-Term Trend Summary Data Tables (2000), National Assessment of Educational Progress: The Nation's Report Card, http://nces.ed.gov/nationsreportcard/tables/Ltt1999/

Appendix table 1-8

Trends in average science scale scores by age, sex, and race/ethnicity: 1990–99

Age, sex, and race/ethnicity	1990	1992	1994	1996	1999
Age 9, total	229	231	231	230	229
Male	230	235	232	232	231
Female	227	227	230	228	228
White	237	239	240	239	240
Black	196	200	201	202	199
Hispanic	206	205	201	207	206
Age 13, total	255	258	257	256	257
Male	259	260	259	260	259
Female	252	256	254	252	253
White	264	267	267	266	266
Black	226	224	224	226	227
Hispanic	232	238	232	232	227
Age 17, total	290	294	294	296	295
Male	296	299	300	300	300
Female	285	289	289	292	291
White	301	304	306	307	306
Black	253	256	257	260	254
Hispanic	261	270	261	269	276

NOTES: Other racial/ethnic groups are not reported, as the samples were of insufficient size to analyze and report separately. Standard errors are included in the source publication.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Results Over Time—NAEP 1999 Long-Term Trend Summary Data Tables (2000), National Assessment of Educational Progress: The Nation's Report Card, http://nces.ed.gov/nationsreportcard/tables/Ltt1999/

Appendix table 1-9

Teacher reports of computer and Internet availability and use in public schools, by minority enrollment of school: 1999

(Percent of teachers reporting)

Indicator of computer and Internet availability and use	Total	Minority enrollment in school			
		Less than 6 percent	6 to 20 percent	21 to 49 percent	50 percent or more
Computer and Internet availability					
Computers available in classroom	84	85	86	89	77
Computers available elsewhere in school	95	94	95	96	95
Internet available in classroom	64	69	71	62	51
Internet available elsewhere in school	90	92	93	92	83
E-mail available at school	74	78	80	74	62
Barriers to instructional use of computers and the Internet[a]					
Not enough computers	38	35	35	38	45
Outdated, incompatible, or unreliable computers	25	22	22	26	32
Internet access not easily accessible	27	24	20	27	36
Teacher use of computers or the Internet[b]					
Create instructional material	78	79	81	82	71
Gather information for lesson plans	59	61	67	60	46
Administrative recordkeeping	51	51	55	55	40
Access research and best practice examples	37	39	41	33	35
Multimedia presentations	36	40	38	35	29
Access model lesson plans	34	35	37	31	33
Student use of computers or the Internet[c]					
Word processing/spreadsheets	61	66	61	61	53
Internet research	51	57	52	51	41
Drills	50	55	51	47	47
Solve problems/analyze data	50	55	50	48	45
CD-ROM research	48	55	50	48	38

[a] Teacher reports of "great" barriers to their use of computers or the Internet for instruction.

[b] Teacher reports of performing activities either "a little" or "a lot" with computers or the Internet.

[c] Teacher reports of assigning their students activities to perform using computers or the Internet.

NOTE: Teachers who reported that computers were not available to them anywhere in the school were excluded from the analyses presented here.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, Survey on Public School Teachers Use of Computers and the Internet, FRSS 70, 1999.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 1-10

Percentage distributions of mathematics teachers, by various characteristics and grades taught: 1993 and 2000

Characteristic	Grades 1–4[a]		Grades 5–8		Grades 9–12	
	1993	2000	1993	2000	1993	2000
Sex						
Male	3 (1.2)	4 (1.0)	27 (2.7)	24 (3.2)	52 (2.8)	45 (2.0)
Female	97 (1.3)	96 (1.0)	73 (2.5)	76 (3.2)	48 (2.8)	55 (2.0)
Race/ethnicity						
White	90 (1.1)	90 (1.5)	90 (1.7)	86 (2.0)	92 (1.1)	91 (1.1)
Black	4 (0.7)	4 (0.7)	5 (0.7)	8 (1.6)	4 (0.8)	4 (0.8)
Hispanic	5 (1.8)	5 (1.3)	4 (1.2)	5 (1.4)	1 (0.5)	2 (0.3)
American Indian/Alaskan Native	0 (0.3)	1 (0.2)	0 (0.2)	1 (0.3)	0 (0.2)	1 (0.3)
Native Hawaiian or other Pacific Islander[b]	NA	0 (0.1)	NA	0 (0.3)	NA	0 (0.2)
Asian[c]	1 (0.1)	0 (0.2)	1 (0.7)	2 (0.6)	2 (0.7)	1 (0.3)
Age						
30 or younger	17 (2.2)	21 (2.1)	15 (3.4)	21 (2.7)	13 (1.8)	16 (1.4)
31 to 40	27 (2.6)	21 (1.8)	21 (1.9)	24 (2.8)	23 (2.7)	24 (1.5)
41 to 50	32 (2.3)	31 (2.3)	46 (2.9)	26 (3.0)	42 (2.3)	29 (2.0)
51 or older	23 (2.4)	27 (2.4)	18 (3.1)	30 (3.4)	22 (1.9)	30 (1.7)
Experience						
0 to 2 years	12 (1.8)	17 (1.8)	12 (2.2)	21 (3.3)	10 (1.2)	13 (1.4)
3 to 5 years	14 (1.3)	13 (1.5)	9 (1.4)	12 (1.8)	9 (1.2)	15 (1.6)
6 to 10 years	17 (2.3)	14 (1.6)	22 (3.5)	16 (2.4)	20 (3.3)	14 (1.5)
11 to 20 years	36 (2.3)	26 (2.0)	34 (2.8)	21 (2.5)	28 (1.6)	24 (1.7)
21 or more years	22 (2.7)	28 (2.3)	22 (2.9)	31 (3.3)	33 (1.9)	34 (2.0)
Master's degree						
Yes	35 (2.4)	43 (2.5)	41 (3.2)	45 (3.8)	53 (2.8)	52 (2.2)
No	65 (2.4)	57 (2.5)	59 (3.2)	55 (3.8)	47 (2.8)	48 (2.2)

NA = not available

[a] 2000 data include kindergarten teachers.

[b] This category did not exist in 1993.

[c] In 1993, this category appeared as "Asian or Pacific Islander."

NOTE: Standard errors are in parentheses.

SOURCE: Horizon Research, Inc., 2000 National Survey of Science and Mathematics Education.

Appendix table 1-11

Percentage distributions of science teachers, by various characteristics and grades taught: 1993 and 2000

Characteristic	Grades 1–4[a]		Grades 5–8		Grades 9–12	
	1993	2000	1993	2000	1993	2000
Sex						
Male	9 (1.3)	8 (1.2)	31 (3.3)	23 (3.1)	66 (3.2)	50 (2.1)
Female	91 (1.4)	92 (1.2)	69 (3.4)	77 (3.1)	34 (3.2)	50 (2.1)
Race/ethnicity						
White	88 (2.2)	88 (1.9)	89 (2.6)	87 (1.8)	95 (0.8)	90 (1.2)
Black	6 (1.8)	5 (0.9)	6 (1.4)	5 (1.1)	3 (0.4)	4 (0.8)
Hispanic	5 (1.2)	4 (1.1)	1 (0.7)	3 (1.0)	1 (0.3)	3 (0.5)
American Indian/Alaskan Native	0 (0.3)	1 (0.3)	0 (0.3)	1 (0.5)	1 (0.4)	2 (0.5)
Native Hawaiian or other Pacific Islander[b]	NA	0 (0.1)	NA	0 (0.1)	NA	0 (0.1)
Asian[c]	0 (0.3)	1 (1.0)	3 (1.7)	1 (0.6)	1 (0.1)	2 (0.6)
Age						
30 or younger	16 (2.3)	20 (2.0)	11 (1.4)	19 (2.8)	13 (1.1)	20 (2.5)
31 to 40	26 (2.6)	19 (1.8)	28 (3.0)	22 (3.1)	23 (3.2)	23 (1.7)
41 to 50	40 (2.9)	34 (2.1)	36 (3.4)	30 (3.1)	41 (3.4)	29 (1.9)
51 or older	18 (2.4)	27 (1.9)	25 (3.9)	29 (3.7)	23 (2.7)	28 (1.7)
Experience						
0 to 2 years	13 (2.1)	14 (1.6)	12 (1.9)	16 (2.7)	11 (1.2)	16 (2.2)
3 to 5 years	10 (1.5)	17 (1.6)	11 (1.6)	9 (1.5)	10 (1.1)	16 (1.7)
6 to 10 years	15 (1.7)	16 (1.8)	19 (2.7)	19 (2.6)	14 (3.1)	18 (1.4)
11 to 20 years	43 (2.7)	27 (1.9)	34 (3.1)	24 (3.3)	30 (1.9)	21 (1.6)
21 or more years	19 (2.7)	26 (2.4)	25 (3.1)	32 (3.1)	35 (2.6)	29 (1.7)
Master's degree						
Yes	34 (2.8)	42 (2.7)	42 (3.4)	51 (3.2)	57 (2.1)	59 (2.3)
No	66 (2.8)	58 (2.7)	58 (3.4)	49 (3.2)	43 (2.1)	41 (2.3)

NA not available

[a] 2000 data include kindergarten teachers

[b] This category did not exist in 1993.

[c] In 1993, this category appeared as "Asian or Pacific Islander."

NOTE: Standard errors are in parentheses.

SOURCE: Horizon Research, Inc., 2000 National Survey of Science and Mathematics Education.

Appendix table 1-12

Race/ethnicity of students ages 6 through 21 served under IDEA, by type of disability: Academic year 1998/99

(Percent)

Type of disability	Total	White, non-Hispanic	Asian/Pacific Islander	Black, non-Hispanic	Hispanic	American Indian/Alaskan Native
All resident population[a]	100.0	66.2	3.8	14.8	14.2	1.0
Students served under IDEA	100.0	63.6	1.7	20.2	13.1	1.3
Specific learning disabilities	100.0	63.0	1.4	18.3	15.8	1.4
Speech or language impairments	100.0	68.3	2.4	16.5	11.6	1.2
Mental retardation	100.0	54.1	1.7	34.3	8.9	1.1
Serious emotional disturbance	100.0	61.6	1.0	26.4	9.8	1.1
Multiple disabilities	100.0	66.1	2.3	19.3	10.9	1.4
Hearing impairments	100.0	66.0	4.6	16.8	16.3	1.4
Orthopedic impairments	100.0	67.2	3.0	14.6	14.4	0.8
Other health impairments	100.0	75.8	1.3	14.1	7.8	1.0
Visual impairments	100.0	69.5	3.0	14.8	11.4	1.3
Autism	100.0	64.4	4.7	20.9	9.4	0.7
Deaf-blindness	100.0	63.3	11.3	11.5	12.1	1.8
Traumatic brain injury	100.0	70.2	2.3	15.9	10.0	1.6
Developmental delay	100.0	60.8	1.1	33.7	4.0	0.5

IDEA Individuals With Disabilities Education Act

[a] Data for all 6- to 21-year-olds are for the 50 states and District of Columbia only. Percentages may not total 100 because of rounding.

SOURCE: U.S. Department of Education, Office of Special Education Programs, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000), http://www.ed.gov/offices/OSERS/OSEP/Products/OSEP2000AnlRpt/.

Appendix table 1-13

Average mathematics and science scale scores in grade 8, by parents' highest level of education and race/ethnicity: 1996

Subject and race/ethnicity	Parents' highest level of education									
	Not a high school graduate		High school graduate		Some education after high school		College graduate		Unknown	
Mathematics, total	281.9	(1.8)	294.0	(1.3)	302.4	(0.8)	313.9	(1.3)	274.8	(2.4)
White	263.7	(3.2)	269.9	(1.3)	285.5	(1.6)	290.5	(1.5)	268.3	(2.3)
Black	—	—	235.0	(2.4)	256.8	(1.9)	245.5	(3.0)	234.5	(2.7)
Hispanic	248.2	(18.7)	244.4	(19.4)	265.8	(16.0)	262.0	(3.2)	236.4	(3.3)
Asian/Pacific Islander	—	—	—	—	—	—	289.6	(4.6)	258.6	(5.2)
American Indian/Alaskan Native	—	—	—	—	—	—	—	—	—	—
Science, total	130.8	(1.9)	140.4	(1.5)	155.2	(1.1)	158.8	(1.2)	133.6	(2.4)
White	140.4	(2.8)	149.7	(1.5)	162.1	(1.3)	166.6	(1.4)	145.4	(3.0)
Black	113.6	(3.3)	115.4	(2.1)	128.4	(2.4)	126.2	(1.6)	111.3	(2.9)
Hispanic	121.0	(3.3)	125.9	(3.1)	134.7	(2.5)	137.5	(1.9)	119.3	(2.8)
Asian/Pacific Islander	—	—	—	—	—	—	161.2	(3.5)	139.4	(5.0)
American Indian/Alaskan Native	—	—	—	—	—	—	—	—	—	—

— sample size too small to permit reliable estimate

NOTES: Mathematics scale scores range from 0 to 500; science scale scores range from 0 to 300. Observed differences are not necessarily statistically significant. Standard errors are in parentheses.

SOURCE: National Center for Education Statistics, 1996 National Assessment of Educational Progress, Summary Data Tables, http://nces.ed.gov/naep3/tables/sdt1996

Appendix table 1-14

Percentage of 4th, 8th, and 12th graders agreeing with the statements "I like mathematics" and "I am good at mathematics," by sex and race/ethnicity: 2000

Sex and race/ethnicity	I like mathematics			I am good at mathematics		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
Total	70	54	47	64	65	53
Male	73	56	49	70	72	58
Female	67	52	44	59	60	47
White	69	51	46	66	68	54
Black	75	62	48	64	64	51
Hispanic	72	53	47	56	59	45
Asian/Pacific Islander	NA	65	59	NA	70	56
American Indian/Alaskan Native	70	55	53	55	55	51

NA not available

NOTES: Questions were asked slightly differently at the different grades. Fourth graders responded on a scale of agree, undecided, disagree; 8th and 12th graders responded strongly agree, agree, undecided, disagree, strongly disagree. Percentages shown here are for respondents answering agree or strongly agree. Source table includes standard errors for individual groups.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 2000 Mathematics Assessment, http://nces.ed.gov/nationsreportcard/naepdata/.

Appendix table 1-15

Percentage of 4th, 8th, and 12th graders agreeing with the statements "I like science" and "I am good at science," by sex and race/ethnicity: 2000

Sex and race/ethnicity	I like science			I am good at science		
	Grade 4	Grade 8	Grade 12	Grade 4	Grade 8	Grade 12
Total	65	50	47	45	47	39
Male	67	55	52	50	54	44
Female	62	46	42	40	41	34
White	65	51	48	48	51	41
Black	62	51	46	43	45	37
Hispanic	64	45	41	33	33	26
Asian/Pacific Islander	NA	48	50	NA	44	36
American Indian/Alaskan Native	63	39	51	46	33	38

NA not available

NOTE: Source table includes standard errors for individual groups.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, 2000 Science Assessment, http://nces.ed.gov/nationsreportcard/naepdata/.

Appendix table 1-16

Percentage of students ages 6 through 21 with disabilities receiving special education services, by environment: Academic years 1989/90–1997/98

Year	Total	Outside regular classroom, but in regular school building				Separate facility		Residential facility		Home/ hospital
		Total	Less than 21 percent of the day	21 to 60 percent of the day	More than 60 percent of the day	Public	Private	Public	Private	
1989/90	100.0	93.9	31.5	37.5	24.9	3.2	1.3	0.7	0.3	0.6
1990/91	100.0	94.4	32.8	36.5	25.1	2.9	1.3	0.6	0.3	0.6
1991/92	100.0	94.7	34.9	36.3	23.5	2.5	1.4	0.6	0.3	0.5
1992/93	100.0	94.9	39.8	31.7	23.4	2.4	1.2	0.6	0.3	0.5
1993/94	100.0	95.6	43.4	29.5	22.7	2.2	1.0	0.5	0.3	0.6
1994/95	100.0	95.7	44.5	28.7	22.4	2.0	1.0	0.5	0.3	0.6
1995/96	100.0	95.6	45.3	28.7	21.6	2.1	1.0	0.4	0.3	0.6
1996/97	100.0	95.7	45.8	28.5	21.4	2.1	1.0	0.4	0.3	0.5
1997/98	100.0	95.9	46.4	29.0	20.4	1.8	1.0	0.4	0.3	0.5

NOTE: Percentages may not total 100 because of rounding.

SOURCE: U.S. Department of Education, Office of Special Education Programs, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000), http://www.ed.gov/offices/OSERS/OSEP/Products/OSEP2000AnlRpt/.

Appendix table 1-17

Percentage of students ages 6 through 21 with disabilities receiving special education services, by type of disability and educational environment: Academic year 1997/98

Type of disability	Total	Outside regular classroom, but in regular school building				Separate facility	Residential facility	Home/ hospital
		Total	Less than 21 percent of the day	21 to 60 percent of the day	More than 60 percent of the day			
All disabilities	100.0	95.8	46.4	29.0	20.4	2.9	0.7	0.6
Specific learning disabilities	100.0	99.1	43.8	39.3	16.0	0.6	0.2	0.2
Speech or language impairments	100.0	99.5	87.8	7.3	4.4	0.3	0.0	0.1
Mental retardation	100.0	93.9	12.6	29.6	51.7	5.2	0.6	0.4
Serious emotional disturbance	100.0	81.8	25.0	23.3	33.5	13.1	1.6	1.6
Multiple disabilities	100.0	72.4	10.0	17.3	45.1	22.3	2.9	2.5
Hearing impairments	100.0	83.3	38.8	19.1	25.4	7.4	9.2	0.2
Orthopedic impairments	100.0	94.1	46.6	21.3	26.2	3.7	0.3	2.0
Other health impairments	100.0	93.5	41.4	33.8	18.3	1.7	0.3	4.7
Visual impairments	100.0	85.5	48.1	20.1	17.3	6.7	7.1	0.7
Autism	100.0	83.1	18.3	12.7	52.1	14.6	1.8	0.5
Deaf-blindness	100.0	63.9	13.6	11.3	39.0	19.9	14.8	1.5
Traumatic brain injury	100.0	86.1	29.8	26.2	30.1	9.8	1.6	2.5

NOTE: Percentages may not total 100 because of rounding.

SOURCE: U.S. Department of Education, Office of Special Education Programs, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000), http://www.ed.gov/offices/OSERS/OSEP/Products/OSEP2000AnlRpt/.

Appendix table 1-18

Students ages 6 through 21 served under the Individuals With Disabilities Education Act, by type of disability: Academic years 1989/90 and 1998/99

Type of disability	1989/90		1998/99		Percent change
	Number	Percent	Number	Percent	
All disabilities	4,253,018	100.0	5,541,166	100.0	30.3
Specific learning disabilities	2,062,076	48.5	2,817,148	50.8	36.6
Speech or language impairments	974,256	22.9	1,074,548	19.4	10.3
Mental retardation	563,902	13.3	611,076	11.0	8.4
Serious emotional disturbance	381,639	9.0	463,262	8.4	21.4
Multiple disabilities	87,957	2.1	107,763	1.9	22.5
Hearing impairments	57,906	1.4	70,883	1.3	22.4
Orthopedic impairments	48,050	1.1	69,495	1.3	44.6
Other health impairments	52,733	1.2	220,831	4.0	318.7
Visual impairments	22,866	0.5	26,132	0.5	14.3
Autism	NA	NA	53,576	1.0	NA
Deaf-blindness	1,633	—	1,609	—	-1.5
Traumatic brain injury	NA	NA	12,933	0.2	NA
Developmental Delay	NA	NA	11,910	0.2	NA

— less than 0.05 percent

NA not available

NOTES: Data from 1989/90 include children with disabilities served under Chapter 1 of the Elementary and Secondary Education Act. Percentages may not total 100 because of rounding.

SOURCE: U.S. Department of Education, Office of Special Education Programs, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000). http://www.ed.gov/offices/OSERS/OSEP/Products/OSEP2000AnlRpt/.

Appendix table 1-19

Percentage of 25- to 29-year-olds who had completed high school, by race/ethnicity and sex: 1971–99

Year	Total			White, non-Hispanic			Black, non-Hispanic			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
1971	77.7	79.1	76.5	81.7	83.0	80.5	58.8	56.7	60.5	48.3	51.3	45.7
1972	79.8	80.5	79.2	83.4	84.1	82.7	64.1	61.7	66.0	47.6	47.1	47.9
1973	80.2	80.6	79.8	84.0	84.2	83.9	64.1	63.2	64.9	52.3	54.2	50.6
1974	81.9	83.1	80.8	85.5	86.0	85.0	68.4	71.5	65.8	54.1	55.9	52.5
1975	83.1	84.5	81.7	86.6	88.0	85.2	71.1	72.3	70.1	53.1	52.2	53.9
1976	84.7	86.0	83.5	87.7	89.0	86.4	74.0	72.8	74.9	58.1	57.6	58.4
1977	85.4	86.6	84.2	88.6	89.2	88.0	74.5	77.5	72.0	58.0	61.9	54.6
1978	85.3	86.0	84.6	88.5	88.8	88.2	77.4	78.7	76.3	56.5	58.5	54.6
1979	85.6	86.3	84.9	89.2	89.8	88.5	74.7	74.0	75.3	57.1	55.5	58.6
1980	85.4	85.4	85.5	89.2	89.1	89.2	76.7	74.8	78.3	57.9	57.0	58.8
1981	86.3	86.5	86.1	89.8	89.7	89.9	77.6	78.8	76.6	59.8	59.1	60.4
1982	86.2	86.3	86.1	89.1	89.1	89.1	81.0	80.4	81.5	61.0	60.6	61.2
1983	86.0	86.0	86.0	89.3	89.3	89.3	79.5	79.0	79.9	58.4	57.8	58.9
1984	85.9	85.6	86.3	89.4	89.4	89.4	79.1	75.9	81.7	58.6	56.7	60.1
1985	86.2	85.9	86.4	89.5	89.2	89.9	80.5	80.6	80.5	61.0	58.6	63.1
1986	86.1	85.9	86.4	89.6	88.7	90.4	83.5	86.4	81.0	59.1	58.2	60.0
1987	86.0	85.5	86.4	89.4	88.9	90.0	83.5	84.5	82.6	59.8	58.6	61.0
1988	85.9	84.7	87.1	89.7	88.4	90.9	80.9	80.9	80.9	62.3	59.9	64.8
1989	85.5	84.4	86.5	89.3	88.2	90.4	82.3	80.5	83.8	61.0	61.0	61.1
1990	85.7	84.4	87.0	90.1	88.6	91.6	81.8	81.4	82.0	58.2	56.6	59.9
1991	85.4	84.9	85.8	89.8	89.2	90.5	81.8	83.6	80.1	56.7	56.4	57.2
1992	86.3	86.1	86.5	90.6	90.3	91.1	80.9	82.7	79.3	60.9	61.1	60.6
1993	86.7	86.0	87.4	91.2	90.7	91.8	82.7	84.8	80.8	60.9	58.2	63.9
1994	86.1	84.5	87.6	91.1	90.0	92.3	84.1	82.8	85.3	60.3	58.0	63.0
1995	86.9	86.3	87.4	92.5	92.0	93.0	86.8	88.4	85.3	57.2	55.7	58.7
1996	87.3	86.5	88.1	92.6	92.0	93.1	86.0	87.9	84.5	61.1	59.7	62.9
1997	87.4	85.8	88.9	92.9	91.7	94.0	86.9	85.8	87.8	61.8	59.2	64.8
1998	88.1	86.6	89.6	93.6	92.5	94.6	88.2	88.4	88.1	62.8	59.9	66.3
1999	87.8	86.1	89.5	93.0	91.9	94.1	88.7	88.2	89.2	61.6	57.4	65.9

NOTES: The Current Population Survey (CPS) questions used to gauge educational attainment were changed in 1992. For 1971 to 1991, high school completers were counted as those who had completed 4 years of high school (but may not have had a diploma or equivalency certificate). For 1992 to 1999, high school completers were considered those with a high school diploma or an equivalency certificate. The CPS covers the civilian, noninstitutionalized population of the 50 states and Washington, D.C. Included in total are other racial/ethnic groups not shown separately.

SOURCE: U.S. Bureau of the Census, March Current Population Survey, various years.

Appendix table 1-20

Percentage of students with disabilities age 14 and older exiting special education, by type of disability and basis of exit: Academic year 1997/98

Type of disability	Total exiting special education	Graduated with diploma	Graduated with certificate	Reached maximum age	Returned to regular education	Moved, known to be continuing	Moved, not known to be continuing	Died	Dropped out
All disabilities	100.0	28.4	5.8	0.9	13.3	23.8	11.5	0.3	15.9
Specific learning disabilities	100.0	33.1	4.5	0.3	13.1	22.0	11.1	0.2	15.7
Speech or language impairments	100.0	17.5	2.2	0.3	48.6	15.1	8.6	0.1	7.6
Mental retardation	100.0	24.8	17.1	3.6	4.4	23.1	9.6	0.6	16.6
Serious emotional disturbance	100.0	15.6	2.4	0.5	9.8	33.5	16.9	0.2	21.2
Multiple disabilities	100.0	26.8	12.2	8.6	3.8	27.4	7.7	3.1	10.3
Hearing impairments	100.0	43.3	8.5	1.1	9.5	21.0	8.3	0.3	8.0
Orthopedic impairments	100.0	35.7	6.3	2.2	20.8	17.6	7.8	2.5	7.2
Other health impairments	100.0	30.5	3.2	0.4	25.3	21.1	8.0	0.8	10.7
Visual impairments	100.0	46.8	6.9	1.7	8.3	19.9	7.3	0.9	8.2
Autism	100.0	25.8	18.0	9.3	5.2	28.2	7.1	0.7	5.7
Deaf blindness	100.0	55.7	7.6	7.2	2.5	15.2	5.1	2.1	4.6
Traumatic brain injury	100.0	42.3	8.3	2.2	6.8	20.5	9.3	1.0	9.6

NOTE: Percentages may not total 100 because of rounding.

SOURCE: U.S. Department of Education, Office of Special Education Programs, *Twenty-second Annual Report to Congress on the Implementation of the Individuals With Disabilities Education Act* (Washington, DC, 2000), http://www.ed.gov/offices/OSERS/OSEP/Products/OSEP2000AnlRpt/.

Appendix table 2-1

Percentage of 25- to 29-year-old high school completers with some college and percentage that completed college, by sex and race/ethnicity: 1990–2000

Year	Total			White, non-Hispanic			Black, non-Hispanic			Hispanic		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Percent with some college												
1990	52.0	51.8	52.1	53.6	53.4	53.8	44.1	43.0	45.0	40.1	40.4	39.8
1991	53.1	52.3	53.8	54.9	54.7	56.1	43.2	38.3	47.7	42.2	40.9	43.4
1992	56.7	56.0	57.4	58.8	58.3	59.2	44.7	42.3	46.9	46.8	44.5	49.6
1993	58.9	57.6	60.1	61.0	60.3	61.6	48.4	43.6	52.5	48.8	46.1	51.9
1994	60.5	58.9	62.0	62.7	61.0	64.3	49.6	48.7	50.3	51.5	48.3	55.0
1995	62.2	60.6	63.9	64.6	62.6	66.7	52.0	51.2	52.5	50.3	48.0	52.7
1996	64.7	63.1	66.3	67.0	65.5	68.4	55.9	54.5	57.1	50.9	47.0	55.6
1997	65.4	64.0	66.8	68.2	66.9	69.5	53.7	50.2	56.5	53.9	51.9	56.1
1998	65.6	63.0	68.1	68.5	66.2	70.8	56.6	52.9	59.7	51.7	48.9	54.7
1999	66.1	63.6	68.5	68.7	66.1	71.2	57.8	52.1	62.3	50.6	47.7	53.2
2000	66.2	63.5	68.8	68.2	65.1	71.2	60.8	57.6	63.3	52.3	48.9	56.1
Percent that completed college												
1990	27.1	28.0	26.2	29.3	30.0	28.6	16.4	18.6	14.5	14.0	12.9	15.2
1991	27.2	27.0	27.3	29.7	29.7	29.8	13.4	13.7	13.1	16.3	14.4	18.1
1992	27.3	26.9	27.8	30.0	29.5	30.4	13.7	14.2	13.2	15.6	14.3	17.0
1993	27.3	27.2	27.4	29.8	30.0	29.5	16.1	14.8	17.2	13.6	12.1	15.3
1994	27.0	26.6	27.4	29.7	29.8	29.6	16.2	14.0	17.9	13.3	11.3	15.5
1995	28.4	28.4	28.5	31.2	30.9	31.4	17.8	19.7	16.1	15.5	14.0	17.1
1996	31.1	30.2	32.0	34.1	33.6	34.7	17.0	13.9	19.6	16.4	17.1	15.6
1997	31.8	30.7	32.9	35.2	34.1	36.2	16.4	13.7	18.5	17.8	16.1	19.6
1998	31.0	29.6	32.4	34.5	32.9	36.1	17.9	16.1	19.3	16.5	15.9	17.1
1999	32.1	31.2	33.0	36.1	34.8	37.3	16.9	14.9	18.6	14.4	13.0	15.8
2000	33.0	32.3	33.7	36.2	34.8	37.6	20.6	21.0	20.3	15.4	13.8	21.5

NOTE: The Current Population Survey questions used to obtain educational attainment were changed in 1992. Prior to 1992, "some college" includes those who had completed at least one year of college. From 1992 to 2000, "some college" includes those who reported "some college" as well as those with an associate's degree, vocational certificate, or baccalaureate degree. Prior to 1992, "completed college" includes those who had completed 4 or more years of college. For 1992 to 2000, "completed college" includes those with a bachelor's degree or higher. Included in the total but not shown separately are other racial/ethnic groups.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 2001*, NCES 2001-072 (Washington, DC: U.S. Government Printing Office, 2001).

Appendix table 2-2

Total and full-time undergraduate enrollment at all institutions, by sex, citizenship, and race/ethnicity: Fall 1990–97

Enrollment status, sex, citizenship, and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997
Total undergraduate enrollment	12,110,847	12,595,335	12,693,778	12,482,813	12,417,701	12,399,826	12,424,570	12,458,456
Whites, non-Hispanic	9,273,439	9,508,527	9,388,226	9,101,085	8,916,770	8,806,202	8,731,457	8,684,498
Asians/Pacific Islanders	506,837	565,166	620,463	642,893	683,508	700,828	721,773	745,299
Blacks, non-Hispanic	1,148,979	1,231,252	1,282,732	1,292,621	1,319,684	1,336,052	1,354,910	1,382,028
Hispanics	866,096	949,346	1,032,817	1,064,348	1,109,931	1,167,472	1,218,711	1,253,807
American Indians/Alaskan Natives	95,496	105,839	110,879	112,727	117,434	120,728	122,943	127,191
Temporary residents	220,000	235,205	258,661	269,139	270,374	268,544	274,776	265,633
Male	5,438,593	5,632,690	5,644,113	5,547,126	5,484,342	5,467,370	5,475,620	5,467,836
Whites, non-Hispanic	4,184,777	4,273,310	4,195,726	4,067,289	3,963,400	3,918,342	3,890,906	3,858,521
Asians/Pacific Islanders	257,618	284,673	308,564	318,289	335,960	342,084	350,740	359,927
Blacks, non-Hispanic	448,389	478,648	496,123	500,194	503,512	507,380	513,676	521,120
Hispanics	381,165	418,243	453,488	467,15[illegible]	485,782	505,162	523,717	535,742
American Indians/Alaskan Natives	39,938	44,186	46,572	47,233	48,650	50,223	51,008	52,651
Temporary residents	126,706	133,630	143,640	146,966	147,038	144,179	145,573	139,875
Female	6,672,254	6,962,645	7,049,665	6,935,687	6,933,359	6,932,456	6,948,950	6,990,620
Whites, non-Hispanic	5,088,662	5,235,217	5,192,500	5,033,796	4,953,370	4,887,860	4,840,551	4,825,977
Asians/Pacific Islanders	249,219	280,493	311,899	324,604	347,548	358,744	371,033	385,372
Blacks, non-Hispanic	700,590	752,604	786,609	792,427	816,172	828,672	841,234	860,908
Hispanics	484,931	531,103	579,329	597,193	624,149	662,310	694,994	718,065
American Indians/Alaskan Natives	55,558	61,653	64,307	65,494	68,784	70,505	71,935	74,540
Temporary residents	93,294	101,575	115,021	122,173	123,336	124,365	129,203	125,758
Full-time undergraduate enrollment, total	7,096,494	7,346,260	7,369,223	7,302,852	7,287,543	7,275,785	7,340,530	7,433,839
Whites, non-Hispanic	5,410,069	5,510,013	5,437,032	5,310,930	5,220,478	5,163,690	5,173,725	5,215,055
Asians/Pacific Islanders	309,168	339,467	367,609	387,105	416,347	428,108	439,215	452,629
Blacks, non-Hispanic	678,434	733,802	753,189	763,883	777,098	778,659	795,368	812,110
Hispanics	483,309	528,946	561,566	581,418	604,721	636,116	657,342	673,976
American Indians/Alaskan Natives	51,057	57,339	60,942	62,710	65,909	67,369	69,178	72,563
Temporary residents	164,457	176,693	188,885	196,806	202,990	201,843	205,702	207,506
Male	3,383,161	3,484,304	3,473,410	3,430,498	3,388,062	3,347,441	3,353,561	3,379,157
Whites, non-Hispanic	2,611,667	2,648,578	2,598,252	2,531,133	2,463,939	2,414,960	2,405,911	2,412,811
Asians/Pacific Islanders	160,755	174,480	187,040	195,676	208,652	212,555	216,595	221,241
Blacks, non-Hispanic	277,966	299,931	305,603	309,775	309,009	305,834	309,646	316,346
Hispanics	212,212	232,628	247,291	254,896	263,705	273,117	279,115	284,528
American Indians/Alaskan Natives	22,673	25,081	26,785	27,690	28,618	29,078	29,563	31,103
Temporary residents	97,888	103,606	108,439	111,328	114,139	111,897	112,731	113,128
Female	3,713,333	3,861,956	3,895,813	3,872,354	3,899,481	3,928,344	3,986,969	4,054,682
Whites, non-Hispanic	2,798,402	2,861,435	2,838,780	2,779,797	2,756,539	2,748,730	2,767,814	2,802,244
Asians/Pacific Islanders	148,413	164,987	180,569	191,429	207,695	215,553	222,620	231,388
Blacks, non-Hispanic	400,468	433,871	447,586	454,108	468,089	472,825	485,722	495,764
Hispanics	271,097	296,318	314,275	326,522	341,016	362,999	378,227	389,448
American Indians/Alaskan Natives	28,384	32,258	34,157	35,020	37,291	38,291	39,615	41,460
Temporary residents	66,569	73,087	80,446	85,478	88,851	89,946	92,971	94,378

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey, various years.

Appendix table 2-3

Percentage distribution of 1988 eighth graders, by high school completion status and postsecondary education enrollment, by disability status and type: 1994

Disability status and type	High school completion status				High school completers enrolled in postsecondary education			
	Enrolled in high school or working toward GED	Dropped out	High school diploma	GED or equivalent certificate	Total	At 4-year institution	At public 2-year institution	At other institution[a]
Total	5.2	6.8	82.0	6.0	70.4	59.4	34.4	6.2
Without disabilities	4.3	6.0	83.8	5.9	71.7	61.5	33.3	5.3
With disabilities	10.6	10.3	72.4	5.7	62.8	42.0	44.9	13.1
Visual impairment	15.8	2.0	77.3	4.9	70.4	48.4	44.2	7.4
Hearing impairment or deaf	10.3	4.4	75.5	9.8	60.2	39.8	47.0	13.2
Speech impairment	6.0	4.7	87.0	2.3	58.5	49.0	47.6	3.5
Orthopedic impairment	5.9	17.4	75.0	1.7	73.9	71.4	23.6	5.1
Learning disability	9.6	12.3	71.4	6.8	57.5	28.2	53.9	17.9
Other disability or impairment[b]	14.3	11.5	67.0	7.2	65.9	44.3	42.8	13.0

[a] Private, for-profit less-than-4-year institution; public less-than-2-year institution; or private, not-for-profit less-than-4-year institution.

[b] Parent reported student had any other disability including health problems, emotional problems, mental retardation, or other physical disabilities and had received services for it.

NOTES: Percentages may not total 100 because of rounding. GED refers to passing the General Education Development exam.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999-187 (Washington, DC, 1999).

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 2-4

Percentage distribution of 1995/96 undergraduates, by selected demographic characteristics and enrollment intensity

Demographic characteristic and enrollment intensity	All undergraduates	Men	Women	Whites, non-Hispanic	Asians/Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/Alaskan Natives
Age								
18 or younger	9.6	9.3	9.8	9.7	8.9	8.6	10.9	6.0
19–23	45.1	48.4	42.5	45.3	51.8	40.3	45.5	40.7
24–29	18.3	19.1	17.7	17.2	19.8	20.7	21.6	22.8
30–39	15.0	13.4	16.2	14.8	11.6	18.3	14.3	21.7
40 or older	12.1	9.8	13.8	13.1	7.9	12.2	7.8	8.9
Average age	26.6	25.8	27.2	26.8	25.3	27.2	25.3	27.3
Family income[a]								
Less than $20,000	18.8	18.4	19.2	12.1	29.2	39.9	38.0	36.8
$20,000–39,999	22.8	21.6	23.9	21.0	25.3	28.1	29.2	24.3
$40,000–59,999	22.7	22.9	22.6	25.4	16.4	16.4	14.0	19.9
$60,000–79,999	16.7	17.2	16.2	19.2	12.6	7.3	10.6	13.8
$80,000–99,999	8.3	8.4	8.2	9.6	6.4	5.0	4.3	3.2
$100,000 or more	10.7	11.4	10.0	12.7	10.1	3.4	3.8	2.1
Marital status								
Not married	77.1	80.8	74.4	75.8	83.7	80.2	78.5	72.7
Married	21.0	18.3	23.0	22.6	15.8	16.2	18.5	25.1
Separated	1.9	1.0	2.7	1.6	0.5	3.6	3.0	2.3
Number of dependents								
None	75.5	81.1	71.3	78.0	85.9	61.6	69.7	63.8
One	10.7	8.0	12.7	9.2	5.3	18.3	14.0	16.9
Two or more	13.8	10.9	16.0	12.7	8.8	20.2	16.3	19.2
Single parent	11.0	6.9	14.1	8.6	5.9	23.7	14.9	16.0
Enrollment intensity								
Full time full year	38.3	40.0	37.0	39.0	44.6	33.6	34.6	36.3
Full time part year	13.1	13.7	12.6	12.2	13.2	16.4	14.6	13.7
Part time full year	24.2	22.1	25.8	23.7	23.5	25.6	26.5	25.9
Part time part year	24.2	24.2	24.6	25.1	18.8	24.4	24.3	24.2

[a] Includes only students who are dependents.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study.

Appendix table 2-5

Percentage distribution of academic year 1995/96 undergraduate students, by selected demographic and educational characteristics and disability status

Page 1 of 2

Characteristic	Total[a]	Without disabilities	With disabilities
Age			
18 or younger	10.2	10.3	8.2
19–23	44.7	45.0	37.8
24–29	17.9	18.3	13.6
30–39	15.0	14.8	17.7
40 or older	12.2	11.6	22.7
Average age	27.0	26.0	30.0
Sex			
Male	44.1	43.7	50.0
Female	55.9	56.3	50.0
Race/ethnicity			
White, non-Hispanic	71.4	71.0	80.9
Asian/Pacific Islander	5.3	5.4	1.8
Black, non-Hispanic	11.6	11.8	7.1
Hispanic	10.3	10.5	7.7
American Indian/Alaskan Native	0.9	0.8	2.1
Other	0.5	0.5	0.4
Income quartile			
Low income quartile	22.2	21.9	26.8
Middle income quartiles	50.5	50.7	50.0
High income quartile	27.4	27.5	23.2
Marital status			
Married	24.6	24.6	27.1
Has dependents	24.2	23.8	29.8
Institution type			
4-year institution	46.1	46.7	39.6
Other institution[b]	53.9	53.3	60.4
Financial aid			
Received any financial aid	52.4	53.2	47.7
Received Federal aid	39.3	40.0	33.8
Received grants	40.3	41.1	34.9
Received loans	31.1	31.7	25.7
Received employer aid	2.8	2.9	2.0
Received work-study	8.5	8.8	6.1
Received other aid	8.0	7.9	11.1
Enrollment intensity			
Full time full year	40.5	40.8	38.7
Full time part year	12.7	12.4	15.6
Part time full year	24.6	24.6	24.5
Part time part year	22.2	22.3	21.2

See explanatory information and SOURCE at end of table

Appendix table 2-5

Percentage distribution of academic year 1995/96 undergraduate students, by selected demographic and educational characteristics and disability status

Page 2 of 2

Characteristic	Total[a]	Without disabilities	With disabilities
Major field of study[c]			
Science and engineering, total	26.7	26.9	26.4
Physical sciences	1.0	1.0	0.6
Mathematics	0.6	0.6	0.2
Computer/information science	3.4	3.3	3.9
Life sciences	5.7	5.7	3.4
Social/behavioral sciences	9.5	9.7	9.4
Engineering	8.1	8.2	9.7
Humanities	14.6	14.5	17.6
Education	8.5	8.7	8.3
Business/management	19.7	19.8	17.4
Health	12.7	12.8	11.4
Vocational/technical	2.7	2.6	3.8
Other technical/professional	13.5	13.3	14.2

[a] Total includes those with unknown disability status who are not shown separately.

[b] 2-year institutions, private for-profit institutions, or public less-than-2-year institutions.

[c] Field classifications reflect National Center for Education Statistics taxonomy and do not correspond to National Science Foundation (NSF) categories. For example, history is included here with the social/behavioral sciences but is not in the social sciences as classified by NSF.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999-187 (Washington, DC, 1999).

Appendix table 2-6

Undergraduate enrollment, by type of institution, enrollment status, sex, and race/ethnicity: 1997

Sex and race/ethnicity	Total, all institutions			Public institutions			Private institutions		
	Enrolled full time	Enrolled part time	Percent part time	Enrolled full time	Enrolled part time	Percent part time	Enrolled full time	Enrolled part time	Percent part time
Total	7,208,476	4,954,565	40.7	5,378,662	4,423,917	45.1	1,829,814	530,648	22.5
Male	3,256,947	2,056,732	38.7	2,446,141	1,850,972	43.1	810,806	205,760	20.2
Female	3,951,529	2,897,833	42.3	2,932,521	2,572,945	46.7	1,019,008	324,888	24.2
White, non-Hispanic	5,202,927	3,459,859	39.9	3,863,653	3,066,481	44.2	1,339,274	393,378	22.7
Male	2,406,342	1,441,403	37.5	1,801,034	1,288,649	41.7	605,308	152,754	20.2
Female	2,796,585	2,018,456	41.9	2,062,619	1,777,832	46.3	733,966	240,624	24.7
Asian/Pacific Islander	452,093	292,367	39.3	351,991	274,685	43.8	100,102	17,682	15.0
Male	220,934	138,537	38.5	174,320	130,299	42.8	46,614	8,238	15.0
Female	231,159	153,830	40.0	177,671	144,386	44.8	53,488	9,444	15.0
Black, non-Hispanic	810,236	568,719	41.2	608,431	501,774	45.2	201,805	66,945	24.9
Male	315,550	204,350	39.3	236,146	181,944	43.5	79,404	22,406	22.0
Female	494,686	364,369	42.4	372,285	319,830	46.2	122,401	44,539	26.7
Hispanic	671,051	579,207	46.3	494,092	531,123	51.8	176,959	48,084	21.4
Male	283,228	250,999	47.0	208,618	230,451	52.5	74,610	20,548	21.6
Female	387,823	328,208	45.8	285,474	300,672	51.3	102,349	27,536	21.2
American Indian/Alaskan Native	72,169	54,413	43.0	60,495	49,854	45.2	11,674	4,559	28.1
Male	30,893	21,443	41.0	26,023	19,629	43.0	4,870	1,814	27.1
Female	41,276	32,970	44.4	34,472	30,225	46.7	6,804	2,745	28.7

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation/Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey.

Appendix table 2-7

Total and full-time undergraduate enrollment at 2-year institutions, by sex, citizenship, and race/ethnicity: Fall 1990–97

Enrollment status, sex, citizenship, and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997
Total undergraduate enrollment	5,200,148	5,573,230	5,708,924	5,551,977	5,499,378	5,459,520	5,476,207	5,467,043
Whites, non-Hispanic	3,909,526	4,125,460	4,108,008	3,933,871	3,820,766	3,752,368	3,709,054	3,661,025
Asians/Pacific Islanders	219,191	258,244	294,266	300,704	318,042	319,542	327,999	340,358
Blacks, non-Hispanic	519,140	566,493	597,906	594,865	609,499	615,301	626,426	638,096
Hispanics	432,368	490,074	556,552	569,161	595,490	619,649	655,955	680,791
American Indians/Alaskan Natives	52,394	59,234	61,353	61,542	63,361	63,363	64,373	65,469
Temporary residents	67,529	73,725	90,839	91,834	92,220	89,297	92,400	81,304
Male	2,220,119	2,372,034	2,412,651	2,346,640	2,318,388	2,323,664	2,349,178	2,341,577
Whites, non-Hispanic	1,664,659	1,750,727	1,730,628	1,658,049	1,607,986	1,601,607	1,601,902	1,581,983
Asians/Pacific Islanders	109,778	128,816	144,208	147,032	154,791	155,100	158,770	163,600
Blacks, non-Hispanic	197,115	213,536	221,657	220,867	224,090	228,217	234,255	239,045
Hispanics	191,955	216,356	245,094	250,092	260,470	269,573	283,559	292,155
American Indians/Alaskan Natives	21,529	24,414	25,249	25,294	25,692	25,983	26,505	26,905
Temporary residents	35,083	38,185	45,815	45,306	45,359	43,184	44,187	37,889
Female	2,980,029	3,201,196	3,296,273	3,205,337	3,180,990	3,135,856	3,127,029	3,125,466
Whites, non-Hispanic	2,244,867	2,374,733	2,377,380	2,275,822	2,212,780	2,150,761	2,107,152	2,079,042
Asians/Pacific Islanders	109,413	129,428	150,058	153,672	163,251	164,442	169,229	176,758
Blacks, non-Hispanic	322,025	352,957	376,249	373,998	385,409	387,084	392,171	399,051
Hispanics	240,413	273,718	311,458	319,069	335,020	350,076	372,396	388,636
American Indians/Alaskan Natives	30,865	34,820	36,104	36,248	37,669	37,380	37,868	38,564
Temporary residents	32,446	35,540	45,024	46,528	46,861	46,113	48,213	43,415
Full-time undergraduate enrollment, total	1,873,618	2,052,070	2,091,798	2,057,807	2,041,011	1,993,537	2,009,906	2,027,351
Whites, non-Hispanic	1,375,799	1,479,121	1,477,967	1,426,491	1,382,761	1,337,624	1,334,522	1,339,137
Asians/Pacific Islanders	76,906	92,123	103,316	109,387	117,904	117,434	117,865	120,433
Blacks, non-Hispanic	206,724	233,782	238,008	239,634	244,657	239,700	247,673	251,566
Hispanics	157,690	183,204	201,160	208,117	218,992	224,517	234,178	241,164
American Indians/Alaskan Natives	20,284	24,169	25,581	25,949	26,828	26,194	26,740	27,339
Temporary residents	36,215	39,671	45,766	48,229	49,869	48,068	48,928	47,712
Male	878,317	953,451	959,787	938,705	920,081	891,210	897,828	907,968
Whites, non-Hispanic	655,608	699,043	690,128	663,172	636,033	611,426	611,084	615,410
Asians/Pacific Islanders	41,129	48,455	53,335	55,998	60,189	59,663	59,615	60,218
Blacks, non-Hispanic	83,663	93,969	92,821	93,207	92,531	89,609	92,841	96,716
Hispanics	69,227	80,094	88,601	90,581	94,445	95,247	98,559	100,286
American Indians/Alaskan Natives	8,955	10,479	11,023	11,242	11,328	10,954	11,167	11,582
Temporary residents	19,735	21,411	23,879	24,505	25,555	24,311	24,562	23,756
Female	995,301	1,098,619	1,132,011	1,119,102	1,120,930	1,102,327	1,112,078	1,119,383
Whites, non-Hispanic	720,191	780,078	787,839	763,319	746,728	726,198	723,438	723,727
Asians/Pacific Islanders	35,777	43,668	49,981	53,389	57,715	57,771	58,250	60,215
Blacks, non-Hispanic	123,061	139,813	145,187	146,427	152,126	150,091	154,832	154,850
Hispanics	88,463	103,110	112,559	117,536	124,547	129,270	135,619	140,878
American Indians/Alaskan Natives	11,329	13,690	14,558	14,707	15,500	15,240	15,573	15,757
Temporary residents	16,480	18,260	21,887	23,724	24,314	23,757	24,366	23,956

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey, various years.

Appendix table 2-8

Total and full-time undergraduate enrollment at 4-year institutions, by sex, citizenship, and race/ethnicity: Fall 1990–97

Enrollment status, sex, citizenship, and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997
Total undergraduate enrollment	6,910,699	7,022,105	6,984,854	6,930,836	6,918,323	6,940,306	6,948,363	6,991,413
Whites, non-Hispanic	5,363,913	5,383,067	5,280,218	5,167,214	5,096,004	5,053,834	5,022,403	5,023,473
Asians/Pacific Islanders	287,646	306,922	326,197	342,189	365,466	381,286	393,774	404,941
Blacks, non-Hispanic	629,839	664,759	684,826	697,756	710,185	720,751	728,484	743,932
Hispanics	433,728	459,272	476,265	495,187	514,441	547,823	562,756	573,016
American Indians/Alaskan Natives	43,102	46,605	49,526	51,185	54,073	57,365	58,570	61,722
Temporary residents	152,471	161,480	167,822	177,305	178,154	179,247	182,376	184,329
Male	3,218,474	3,260,656	3,231,462	3,200,486	3,165,954	3,143,706	3,126,442	3,126,259
Whites, non-Hispanic	2,520,118	2,522,583	2,465,098	2,409,240	2,355,414	2,316,735	2,289,004	2,276,538
Asians/Pacific Islanders	147,840	155,857	164,356	171,257	181,169	186,984	191,970	196,327
Blacks, non-Hispanic	251,274	265,112	274,466	279,327	279,422	279,163	279,421	282,075
Hispanics	189,210	201,887	208,394	217,063	225,312	235,589	240,158	243,587
American Indians/Alaskan Natives	18,409	19,772	21,323	21,939	22,958	24,240	24,503	25,746
Temporary residents	91,623	95,445	97,825	101,660	101,679	100,995	101,386	101,986
Female	3,692,225	3,761,449	3,753,392	3,730,350	3,752,369	3,796,600	3,821,921	3,865,154
Whites, non-Hispanic	2,843,795	2,860,484	2,815,120	2,757,974	2,740,590	2,737,099	2,733,399	2,746,935
Asians/Pacific Islanders	139,806	151,065	161,841	170,932	184,297	194,302	201,804	208,614
Blacks, non-Hispanic	378,565	399,647	410,360	418,429	430,763	441,588	449,063	461,857
Hispanics	244,518	257,385	267,871	278,124	289,129	312,234	322,598	329,429
American Indians/Alaskan Natives	24,693	26,833	28,203	29,246	31,115	33,125	34,067	35,976
Temporary residents	60,848	66,035	69,997	75,645	76,475	78,252	80,990	82,343
Full-time undergraduate enrollment, total	5,222,876	5,294,190	5,277,425	5,245,045	5,246,532	5,282,248	5,330,624	5,406,488
Whites, non-Hispanic	4,034,270	4,030,892	3,959,065	3,884,439	3,837,717	3,826,066	3,839,203	3,875,918
Asians/Pacific Islanders	232,262	247,344	264,293	277,718	298,443	310,674	321,350	332,196
Blacks, non-Hispanic	471,710	500,020	515,181	524,249	532,441	538,959	547,695	560,544
Hispanics	325,619	345,742	360,406	373,301	385,729	411,599	423,164	432,812
American Indians/Alaskan Natives	30,773	33,170	35,361	36,761	39,081	41,175	42,438	45,224
Temporary residents	128,242	137,022	143,119	148,577	153,121	153,775	156,774	159,794
Male	2,504,844	2,530,853	2,513,623	2,491,793	2,467,981	2,456,231	2,455,733	2,471,189
Whites, non-Hispanic	1,956,059	1,949,535	1,908,124	1,867,961	1,827,906	1,803,534	1,794,827	1,797,401
Asians/Pacific Islanders	119,626	126,025	133,705	139,678	148,463	152,892	156,980	161,023
Blacks, non-Hispanic	194,303	205,962	212,782	216,568	216,478	216,225	216,805	219,630
Hispanics	142,985	152,534	158,690	164,315	169,260	177,870	180,556	184,242
American Indians/Alaskan Natives	13,718	14,602	15,762	16,448	17,290	18,124	18,396	19,521
Temporary residents	78,153	82,195	84,560	86,823	88,584	87,586	88,169	89,372
Female	2,718,032	2,763,337	2,763,802	2,753,252	2,778,551	2,826,017	2,874,891	2,935,299
Whites, non-Hispanic	2,078,211	2,081,357	2,050,941	2,016,478	2,009,811	2,022,532	2,044,376	2,078,517
Asians/Pacific Islanders	112,636	121,319	130,588	138,040	149,980	157,782	164,370	171,173
Blacks, non-Hispanic	277,407	294,058	302,399	307,681	315,963	322,734	330,890	340,914
Hispanics	182,634	193,208	201,716	208,986	216,469	233,729	242,608	248,570
American Indians/Alaskan Natives	17,055	18,568	19,599	20,313	21,791	23,051	24,042	25,703
Temporary residents	50,089	54,827	58,559	61,754	64,537	66,189	68,605	70,422

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Fall Enrollment Survey, various years.

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Appendix table 2-9

First university degree enrollments, by country and sex: 1998

Country	Total	Male	Female	Percent female enrollment
Australia	622,280	277,653	344,627	55.4
Canada	843,894	361,755	482,139	57.1
France	1,452,786	641,797	810,989	55.8
Germany	1,785,938	1,008,023	777,915	43.6
Italy	1,823,210	795,600	1,027,610	56.4
Japan	2,753,492	1,773,326	980,166	35.6
Mexico	1,620,335	834,737	785,598	48.5
South Korea	1,547,924	1,010,367	537,557	34.7
Spain	1,596,644	745,087	851,557	53.3
Turkey	1,007,053	630,889	376,164	37.4
United Kingdom	1,280,380	615,109	665,270	52.0
United States	10,218,528	4,502,221	5,716,306	55.9

NOTE: A first university degree refers to completion of an undergraduate degree program. These degrees are classified as level 6 in the International Standard Classification of Education, although individual countries use different names for the first terminal degree: for example, *laureata* in Italy, *diplome* in Germany, *maitrise* in France, and bachelor's degree in the United States and in Asian countries.

SOURCE: Organisation for Economic Co-operation and Development, *Education at a Glance* (Paris, 2000).

Appendix table 2-10

Percentage of U.S. freshmen intending S&E majors, by race/ethnicity and sex: 2000

Race/ethnicity and sex	All S&E	Physical sciences	Mathematics and statistics	Computer sciences	Biological/ agricultural sciences	Social and behavioral sciences	Engineering
White, non-Hispanic	29.3	2.0	0.7	3.0	6.6	8.7	8.3
Male	37.0	2.5	0.9	5.6	6.0	6.7	15.3
Female	23.5	1.5	0.6	0.8	7.5	10.6	2.5
Asian/Pacific Islander	41.8	1.5	0.6	8.3	10.2	7.4	13.8
Male	51.8	1.7	0.7	13.3	8.5	5.5	22.1
Female	33.3	1.3	0.7	4.0	11.7	8.9	6.7
Black, non-Hispanic	34.7	1.2	0.5	6.0	7.5	11.1	8.4
Male	38.3	1.4	0.4	9.0	5.8	6.5	15.2
Female	33.0	1.2	0.5	4.2	8.6	14.1	4.4
Chicano/Puerto Rican	32.2	1.4	0.6	2.7	7.1	12.3	8.1
Male	38.4	1.7	0.6	5.1	7.1	7.7	16.2
Female	27.2	1.2	0.5	1.1	6.9	15.3	2.2
Other Hispanic	33.3	1.3	0.3	3.8	7.6	12.7	7.6
Male	40.1	1.8	0.3	7.4	6.8	8.5	15.3
Female	29.2	0.9	0.3	1.4	8.5	15.3	2.8
American Indian/Alaskan Native	32.0	2.6	0.4	2.7	6.7	11.8	7.8
Male	36.6	3.6	0.4	5.1	4.9	8.2	14.4
Female	28.4	1.8	0.3	0.9	7.9	14.4	3.1

NOTES: Data include first-year students at all 4-year colleges. Percentages by discipline may not add to total because of rounding.

SOURCE: Higher Education Research Institute, Survey of the American Freshman: National Norms, special tabulations prepared for the National Science Foundation, Division of Science Resources Statistics (Los Angeles: University of California–Los Angeles, 2000).

Appendix table 2-11

Total and full-time first-year undergraduate enrollment in engineering programs, by sex, citizenship, and race/ethnicity: 1990–99

Page 1 of 2

Year	Total	Men	Women	U.S. citizens and permanent residents: Whites, non-Hispanic	Asians/ Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/ Alaskan Natives	Temporary residents
	Number								
Total undergraduate enrollment									
1990	380,287	318,471	61,816	288,732	30,898	20,833	18,873	1,463	19,488
1991	379,977	316,441	63,536	271,906	37,803	24,563	22,441	1,688	21,576
1992	382,525	316,460	66,065	270,942	38,480	25,722	23,863	1,932	21,586
1993	375,944	309,412	66,532	263,073	37,835	25,920	24,586	1,931	22,599
1994	367,298	300,643	66,655	256,287	37,009	24,994	25,216	2,028	21,764
1995	363,315	296,029	67,286	249,896	38,329	25,569	25,998	2,103	21,420
1996	356,177	288,559	67,618	243,270	37,873	24,922	26,483	2,396	21,233
1997	365,358	294,593	70,765	246,950	39,475	24,809	30,580	2,422	21,122
1998	366,991	294,598	72,383	248,439	40,523	25,699	28,802	2,418	21,110
1999	361,395	290,019	71,376	243,560	39,891	25,419	29,111	2,396	21,018
Full-time first-year undergrad enrollment									
1990	94,346	77,672	16,674	67,197	7,926	8,370	5,885	526	4,442
1991	93,002	76,018	16,984	65,560	8,212	8,305	5,949	582	4,394
1992	93,427	74,870	17,947	65,264	8,153	8,924	6,347	633	4,106
1993	88,875	71,821	16,954	61,633	7,969	8,271	6,247	607	4,148
1994	85,047	68,545	16,502	59,455	7,673	7,372	6,157	617	3,773
1995	86,299	69,102	17,197	59,864	7,767	7,890	6,500	601	3,677
1996	85,375	68,375	17,000	58,929	7,997	7,482	6,602	656	3,709
1997	90,882	72,943	17,943	61,882	9,125	7,403	7,757	688	4,027
1998	94,909	76,281	18,628	65,578	9,509	8,028	7,016	719	4,057
1999	93,951	75,919	18,032	64,472	9,570	7,989	7,070	676	4,174
	Percent								
Total undergraduate enrollment									
1990	100.0	83.7	16.3	75.9	8.1	5.5	5.0	0.4	6.1
1991	100.0	83.3	16.7	71.6	9.9	6.5	5.9	0.4	6.8
1992	100.0	82.7	17.3	70.8	10.1	6.7	6.2	0.5	6.8
1993	100.0	82.3	17.7	70.0	10.1	6.9	6.5	0.5	7.3
1994	100.0	81.9	18.1	69.8	10.1	6.8	6.9	0.6	7.2
1995	100.0	81.5	18.5	68.8	10.5	7.0	7.2	0.6	7.2
1996	100.0	81.0	19.0	68.3	10.6	7.0	7.4	0.7	7.4
1997	100.0	80.6	19.4	67.6	10.8	6.8	8.4	0.7	7.2
1998	100.0	80.3	19.7	67.7	11.0	7.0	7.8	0.7	7.2
1999	100.0	80.2	19.8	67.4	11.0	7.0	8.1	0.7	7.2

See SOURCE at end of table.

Appendix table 2-11

Total and full-time first-year undergraduate enrollment in engineering programs, by sex, citizenship, and race/ethnicity: 1990–99

Page 2 of 2

Year	Total	Men	Women	U.S. citizens and permanent residents					Temporary residents
				Whites, non-Hispanic	Asians/ Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/ Alaskan Natives	
	Percent								
Full-time first-year undergrad enrollment									
1990	100.0	82.3	17.7	71.2	8.4	8.9	6.2	0.6	4.7
1991	100.0	81.7	18.3	70.5	8.8	8.9	6.4	0.6	4.7
1992	100.0	80.1	19.2	69.9	8.7	9.6	6.8	0.7	4.4
1993	100.0	80.9	19.1	69.3	9.0	9.3	7.0	0.7	4.7
1994	100.0	80.6	19.4	69.9	9.0	8.7	7.2	0.7	4.4
1995	100.0	80.1	19.9	69.4	9.0	9.1	7.5	0.7	4.3
1996	100.0	80.1	19.9	69.0	9.4	8.8	7.7	0.8	4.3
1997	100.0	80.3	19.7	68.1	10.0	8.1	8.5	0.8	4.4
1998	100.0	80.4	19.6	69.1	10.0	8.5	7.4	0.8	4.3
1999	100.0	80.8	19.2	68.6	10.2	8.5	7.5	0.7	4.4

SOURCE: American Association of Engineering Societies, Engineering Workforce Commission, special tabulations (Washington, DC).

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 2-12

Total and full-time first-year undergraduate enrollment in engineering programs, by sex, citizenship, and race/ethnicity: 1999

Enrollment status and sex	Total	U.S. citizens and permanent residents					Temporary residents
		Whites, non-Hispanic	Asians/ Pacific Islanders	Blacks, non-Hispanic	Hispanic	American Indians/Alaskan Natives	
	Number						
Total undergraduate enrollment	361,395	243,560	39,891	25,419	29,111	2,396	21,018
Male	290,019	201,044	30,691	16,882	22,289	1,792	17,321
Female	71,376	42,516	9,200	8,537	6,822	604	3,697
Full-time first-year enrollment	93,951	64,472	9,570	7,989	7,070	676	4,174
Male	75,919	53,613	7,504	5,352	5,408	516	3,526
Female	18,032	10,859	2,066	2,637	1,662	160	648
	Percent						
Total undergraduate enrollment	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	80.2	82.5	76.9	66.4	76.6	74.8	82.4
Female	19.8	17.5	23.1	33.6	23.4	25.2	17.6
Full-time first-year enrollment	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	80.8	83.2	78.4	67.0	76.5	76.3	84.5
Female	19.2	16.8	21.6	33.0	23.5	23.7	15.5

SOURCE: American Association of Engineering Societies, Engineering Workforce Commission, special tabulations (Washington, DC).

Appendix table 2-13

Percentage of undergraduates receiving various types of aid and average amount of aid received, by sex and race/ethnicity: Academic year 1995/96

Sex and race/ethnicity	Type of aid received					Average amount of total aid received (dollars)
	Any aid	Grants	Loans	Work-study	Other	
Total	49.7	39.0	25.6	5.0	7.4	4,926
Male	46.7	35.8	24.4	4.3	8.7	5,110
Female	51.9	41.4	26.5	5.6	6.5	4,801
White, non-Hispanic	47.1	35.4	25.6	4.6	7.5	5,000
Asian/Pacific Islander	42.9	35.7	21.3	6.6	5.7	6,268
Black, non-Hispanic	62.9	52.8	30.9	6.1	9.8	4,700
Hispanic	54.2	47.3	22.3	5.8	5.2	4,152
American Indian/Alaskan Native	59.4	48.4	25.2	3.9	12.0	4,642

SOURCE: U.S. Department of Education, National Center for Education Statistics, *1995-96 National Postsecondary Student Aid Study*.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 2-14

Percentage distribution of 1989/90 beginning postsecondary students seeking bachelor's degrees, by persistence toward and completion of bachelor's and other degrees, by sex and race/ethnicity: Spring 1994

Sex and race/ethnicity	Completed a degree			Still enrolled for bachelor's[b]	No degree, no longer enrolled toward bachelor's[c]
	Bachelor's	Associate's[a]	Certificate[a]		
Male	41.3	4.8	2.7	20.3	30.9
Female	50.3	5.4	4.0	14.6	25.7
White, non-Hispanic	48.1	4.9	3.3	16.6	27.0
Asian/Pacific Islander	46.8	5.3	0.6	21.8	25.5
Black, non-Hispanic	34.3	7.3	3.6	18.0	36.8
Hispanic	32.4	3.5	5.4	22.1	36.6
American Indian/Alaskan Native	S	S	S	S	S

S data suppressed for reasons of confidentiality and/or data reliability

[a] Includes only students who are no longer working toward a bachelor's degree but who have completed another type of degree or award.

[b] Includes students who have completed another type of degree or award but are still working toward a bachelor's degree.

[c] Includes students who are no longer enrolled and students who are still enrolled but no longer working toward a bachelor's degree.

NOTE: Details may not add to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 1998*, NCES 98-013 (Washington, DC: U.S. Government Printing Office, 1998), supplemental table 12-1.

Appendix table 2-15

Percentage of 1994 freshmen intending to major in S&E and percentage of 1998 bachelor's degree recipients earning degrees in S&E, by sex and race/ethnicity

Race/ethnicity	All 1994 freshmen		Males		Females	
	Intended to major in S&E	Received S&E baccalaureate	Intended to major in S&E	Received S&E baccalaureate	Intended to major in S&E	Received S&E baccalaureate
White, non-Hispanic	30.3	31.0	37.1	36.6	24.8	26.6
Asian/Pacific Islander	44.2	48.6	52.6	55.8	35.6	42.3
Black, non-Hispanic	33.8	32.1	38.3	34.8	30.8	30.6
Hispanic[a]	36.5/40.3	32.9	39.6/46.8	37.7	33.6/34.4	29.6
American Indian/Alaskan Native	29.5	31.0	34.1	36.4	26.2	27.4

[a] Data on freshman intentions are reported separately for Hispanic subgroups. The number to the left of the slash is for Mexican Americans and Puerto Ricans. The number to the right of the slash is for other Hispanics.

NOTE: S&E includes the social sciences.

SOURCES: Higher Education Research Institute, Survey of the American Freshman: National Norms, special tabulations prepared for the National Science Foundation, Division of Science Resources Statistics (Los Angeles: University of California-Los Angeles, 2000); and U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Appendix table 2-16

Percentage distribution of 1989/90 beginning postsecondary students according to persistence status and highest undergraduate degree attained, by disability status: Spring 1994

Persistence status and highest degree	Total	Without disabilities	With disabilities
Persistence			
Attained degree or enrolled	63.2	64.1	52.9
Attained degree or certificate	50.0	50.7	41.1
Enrolled in 1994	13.3	13.4	11.8
Not enrolled/no degree or certificate	36.8	36.0	47.2
Highest undergraduate degree attained by 1994			
None	50.1	49.3	58.9
Certificate	12.9	12.5	18.8
Associate's	11.2	11.6	6.0
Bachelor's	25.8	26.6	16.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Students With Disabilities in Postsecondary Education: A Profile of Preparation, Participation, and Outcomes*, NCES 1999-187 (Washington, DC, 1999).

Appendix table 3-1

Associate's degrees awarded, by sex and field: 1990–98

Sex and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total, all fields	459,048	486,297	508,704	519,098	546,574	544,094	540,644	546,031	549,191
Total science and engineering	72,748	71,026	70,297	71,335	75,132	70,590	67,820	68,328	71,006
Physical sciences	1,212	1,218	1,086	1,224	1,413	1,459	1,560	1,540	1,518
Earth, atmospheric, and ocean sciences	33	28	143	168	226	186	189	191	180
Mathematics	760	670	744	743	766	783	759	793	843
Computer science	7,840	7,970	9,632	9,532	9,868	9,627	9,401	10,632	12,899
Agricultural sciences	1,696	1,724	1,978	1,896	1,938	1,910	1,895	1,865	2,007
Biological sciences	1,055	1,142	1,378	1,499	1,907	1,901	2,074	2,181	2,176
Psychology	1,116	997	1,209	1,235	1,756	1,600	1,584	1,606	1,760
Social sciences	3,693	3,090	3,837	4,597	4,863	4,477	5,090	5,075	5,156
Engineering	2,405	2,513	2,715	2,526	2,844	2,285	2,048	1,888	2,107
Science technologies	903	953	969	1,013	1,150	970	965	893	800
Engineering technologies	46,938	45,106	40,592	40,946	42,414	39,190	35,982	35,221	35,163
Other science and engineering technologies	110	70	172	52	265	364	556	556	634
Interdisciplinary or other sciences	4,987	5,545	5,842	5,904	5,722	5,838	5,717	5,887	5,763
Men, all fields	192,433	200,043	208,856	213,263	222,247	219,704	213,090	212,698	215,888
Total science and engineering	55,177	53,405	51,204	51,639	53,414	50,238	46,750	46,155	48,075
Physical sciences	706	679	591	663	783	773	830	733	707
Earth, atmospheric, and ocean sciences	12	23	116	130	162	148	131	126	128
Mathematics	489	406	464	428	437	438	464	444	490
Computer science	3,942	4,032	4,723	4,695	4,947	4,996	4,862	5,720	7,137
Agricultural sciences	1,033	1,119	1,325	1,280	1,233	1,300	1,250	1,196	1,267
Biological sciences	444	457	573	613	770	757	830	789	793
Psychology	286	257	338	282	433	446	405	376	603
Social sciences	1,539	1,154	1,573	1,816	1,784	1,625	1,656	1,635	1,696
Engineering	2,117	2,233	2,360	2,196	2,474	1,978	1,779	1,617	1,784
Science technologies	605	574	573	617	703	623	587	499	426
Engineering technologies	41,435	39,777	35,666	36,129	36,899	34,196	30,947	29,990	29,949
Other science and engineering technologies	96	62	156	44	245	331	514	521	590
Interdisciplinary or other sciences	2,473	2,632	2,746	2,746	2,544	2,627	2,495	2,509	2,505
Women, all fields	266,615	286,254	299,848	305,835	324,327	324,390	327,554	333,333	333,303
Total science and engineering	17,571	17,621	19,093	19,696	21,718	20,352	21,070	22,173	22,931
Physical sciences	506	539	495	561	630	686	730	807	811
Earth, atmospheric, and ocean sciences	21	5	27	38	64	38	58	65	52
Mathematics	271	264	280	315	329	345	295	349	353
Computer science	3,898	3,938	4,909	4,837	4,921	4,631	4,539	4,912	5,762
Agricultural sciences	663	605	653	616	705	610	645	669	740
Biological sciences	611	685	805	886	1,137	1,144	1,244	1,392	1,383
Psychology	830	740	871	953	1,323	1,154	1,179	1,230	1,157
Social sciences	2,154	1,936	2,264	2,781	3,079	2,852	3,434	3,440	3,460
Engineering	288	280	355	330	370	307	269	271	323
Science technologies	298	379	396	396	447	347	378	394	374
Engineering technologies	5,503	5,329	4,926	4,817	5,515	4,994	5,035	5,231	5,214
Other science and engineering technologies	14	8	16	8	20	33	42	35	44
Interdisciplinary or other sciences	2,514	2,913	3,096	3,158	3,178	3,211	3,222	3,378	3,258

NOTE: Unlike in other degree tables, the science and engineering total includes degrees in science and engineering technologies.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-2

Associate's degrees awarded, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1935	1996	1997	1998
Total, all fields	459,048	486,297	508,704	519,098	546,574	544,094	540,644	546,031	549,191
Total science and engineering	75,770	73,835	68,067	69,650	73,193	68,945	65,713	66,412	69,430
Physical sciences[a]	1,248	1,249	1,229	1,392	1,639	1,459	1,749	1,731	1,698
Mathematics	760	670	744	743	765	783	758	792	843
Computer science	7,840	7,970	9,602	9,512	9,767	9,627	9,198	10,080	12,147
Agricultural sciences	1,983	2,039	2,252	2,227	2,247	1,910	2,278	2,274	2,384
Biological sciences	1,055	1,142	1,378	1,471	1,907	1,901	2,074	2,181	2,176
Psychology	1,116	997	1,209	1,237	1,756	1,600	1,584	1,608	1,763
Social sciences	3,002	2,577	3,232	4,011	4,263	4,477	4,158	4,190	4,338
Engineering	2,402	2,510	2,715	2,525	2,828	2,285	2,030	1,865	2,100
Science technologies	903	953	889	905	1,040	970	875	815	747
Engineering technologies	44,739	42,595	38,015	38,473	39,889	39,190	33,597	32,893	32,919
Other science and engineering technologies	110	70	172	52	265	364	556	556	634
Interdisciplinary or other sciences	11,860	12,312	7,859	8,494	8,466	5,838	8,605	9,158	9,379
White, non-Hispanic, all fields	343,629	376,869	388,049	392,637	419,962	408,126	403,072	400,307	396,735
Total science and engineering	55,240	58,124	50,532	50,794	55,825	50,682	48,158	47,819	49,508
Physical sciences[a]	974	968	848	995	1,230	1,024	1,183	1,159	1,107
Mathematics	538	477	522	509	497	479	439	492	501
Computer science	5,166	5,577	6,109	6,006	6,636	6,471	6,096	6,630	7,907
Agricultural sciences	1,775	1,847	2,038	2,017	1,959	1,633	2,067	2,079	2,136
Biological sciences	709	759	992	977	1,304	1,197	1,356	1,310	1,304
Psychology	840	738	918	894	1,321	1,146	1,094	1,087	1,070
Social sciences	1,912	1,609	1,974	2,347	2,729	2,628	2,458	2,412	2,526
Engineering	1,770	1,867	2,086	1,886	2,133	1,658	1,484	1,340	1,432
Science technologies	564	693	640	644	794	683	637	579	535
Engineering technologies	31,699	33,792	28,242	28,442	31,457	29,646	25,480	24,572	24,313
Other science and engineering technologies	69	51	132	28	211	275	457	447	523
Interdisciplinary or other sciences	10,198	10,714	6,879	7,044	6,784	4,866	6,590	6,871	7,261
Asian/Pacific Islander, all fields	12,687	15,069	15,369	16,280	18,555	20,976	22,630	23,882	23,909
Total science and engineering	2,541	2,507	2,565	2,730	2,801	3,057	3,168	3,689	3,662
Physical sciences[a]	91	86	106	76	122	124	165	180	173
Mathematics	75	65	64	69	77	93	103	86	100
Computer science	336	323	484	459	489	513	512	639	785
Agricultural sciences	8	8	10	6	10	10	7	5	9
Biological sciences	80	126	137	146	172	190	216	264	248
Psychology	18	24	34	33	37	57	57	63	53
Social sciences	92	64	98	183	192	248	263	246	262
Engineering	151	146	185	136	184	152	146	148	165
Science technologies	16	31	29	38	35	56	54	63	35
Engineering technologies	1,499	1,496	1,311	1,358	1,258	1,458	1,391	1,514	1,447
Other science and engineering technologies	1	4	4	2	0	13	22	24	0
Interdisciplinary or other sciences	265	220	209	300	347	267	397	457	385

See explanatory information and SOURCE at end of table

Appendix table 3-2

Associate's degrees awarded, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Black, all fields	32,882	37,854	38,721	41,260	45,597	45,923	49,245	51,588	52,957
Total science and engineering	4,785	5,264	4,653	5,291	6,022	5,741	5,949	6,141	6,435
Physical sciences[a]	57	78	71	70	90	93	112	105	126
Mathematics	20	27	27	26	39	45	36	37	33
Computer science	856	894	1,066	978	1,081	1,046	1,088	1,135	1,459
Agricultural sciences	25	14	15	15	20	23	21	14	12
Biological sciences	71	57	75	93	96	147	114	140	155
Psychology	110	103	78	109	149	126	147	126	112
Social sciences	313	332	342	471	415	669	457	526	469
Engineering	88	126	135	201	179	148	134	131	109
Science technologies	36	69	60	63	91	72	97	86	78
Engineering technologies	2,648	3,030	2,445	2,698	3,197	3,015	2,883	2,899	3,046
Other science and engineering technologies	25	11	21	20	37	35	75	83	86
Interdisciplinary or other sciences	593	601	389	617	718	415	897	964	876
Hispanic, all fields	24,569	29,019	30,253	33,015	35,557	38,499	39,115	42,784	45,452
Total science and engineering	4,006	4,323	4,397	4,962	5,201	5,513	5,409	5,651	5,880
Physical sciences[a]	41	45	42	52	92	70	109	110	122
Mathematics	65	55	63	67	85	99	108	110	120
Computer science	526	622	855	1,019	989	1,035	923	1,039	1,237
Agricultural sciences	70	57	70	88	109	136	89	77	85
Biological sciences	104	130	126	160	203	208	221	276	289
Psychology	113	88	116	141	154	193	179	210	180
Social sciences	272	313	369	472	549	586	549	601	616
Engineering	98	153	132	153	148	161	132	112	196
Science technologies	57	94	111	97	87	91	51	59	58
Engineering technologies	2,298	2,411	2,317	2,398	2,478	2,777	2,644	2,570	2,528
Other science and engineering technologies	10	4	14	1	4	28	1	2	1
Interdisciplinary or other sciences	393	396	224	366	395	199	512	595	570
American Indian/Alaskan Native, all fields	3,290	3,772	3,874	4,213	4,879	5,352	5,221	5,520	6,161
Total science and engineering	430	544	446	561	715	718	755	712	859
Physical sciences[a]	4	7	5	7	20	22	26	21	33
Mathematics	14	13	8	15	11	13	9	2	13
Computer science	70	78	61	101	105	111	127	117	144
Agricultural sciences	21	37	38	41	69	54	48	57	65
Biological sciences	13	22	15	25	36	40	42	46	37
Psychology	9	16	31	18	38	35	42	38	37
Social sciences	59	63	75	100	122	121	159	136	143
Engineering	12	21	14	8	18	22	11	25	22
Science technologies	2	10	3	4	6	10	2	3	14
Engineering technologies	168	232	175	210	263	286	242	211	262
Other science and engineering technologies	0	0	0	0	0	3	1	0	24
Interdisciplinary or other sciences	62	52	26	39	47	23	72	56	65

See explanatory information and SOURCE at end of table

Appendix table 3-2

Associate's degrees awarded, by citizenship, race/ethnicity, and field: 1990–98

Page 3 of 3

Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Other/unknown race/ethnicity, all fields	36,054	16,737	24,411	22,669	11,855	15,307	11,339	11,351	11,932
Total science and engineering	7,900	2,134	4,415	4,277	1,506	2,118	1,211	1,401	1,582
Physical sciences[a]	48	35	113	125	29	49	68	62	62
Mathematics	30	17	22	10	17	15	15	21	27
Computer science	735	321	814	712	224	191	209	261	284
Agricultural sciences	66	55	49	27	35	36	28	23	25
Biological sciences	54	26	0	32	40	42	65	67	61
Psychology	19	20	19	25	33	24	33	45	253
Social sciences	313	148	307	318	101	90	111	125	162
Engineering	213	129	83	63	77	67	53	42	43
Science technologies	227	45	40	48	23	44	25	17	13
Engineering technologies	5,960	1,108	3,021	2,987	822	1,582	625	681	611
Other science and engineering technologies	5	0	0	1	13	5	0	0	0
Interdisciplinary or other sciences	278	265	60	54	121	22	47	119	103
Temporary residents, all fields	5,937	6,977	8,027	9,024	10,169	9,911	10,022	10,599	12,045
Total science and engineering	868	939	1,059	1,035	1,123	1,116	1,063	1,294	1,785
Physical sciences[a]	33	30	44	67	56	77	86	94	75
Mathematics	18	16	38	47	39	39	48	44	49
Computer science	151	155	213	237	243	260	243	259	331
Agricultural sciences	18	21	32	33	45	18	18	19	52
Biological sciences	24	22	33	38	56	77	60	78	82
Psychology	7	8	13	17	24	19	32	39	58
Social sciences	41	48	67	120	155	135	161	144	160
Engineering	70	68	80	78	89	77	70	67	133
Science technologies	1	11	6	11	4	14	9	8	14
Engineering technologies	467	526	504	380	414	426	332	446	712
Other science and engineering technologies	0	0	1	0	0	5	0	0	0
Interdisciplinary or other sciences	71	64	72	74	54	46	90	96	119

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation. Also, unlike in other degree tables, the science and engineering total includes degrees in science and engineering technologies.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-3

Associate's degrees awarded in science and engineering, by citizenship, race/ethnicity, sex, and field: 1998

Citizenship, race/ethnicity, and sex	Total science and engineering	Physical sciences[a]	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences	Engineering	Science technologies	Engineering technologies	Other S&E technologies	Interdisciplinary/ other sciences
Total, all races/ethnicities	71,128	1,698	843	12,147	2,384	2,176	1,763	4,338	2,100	747	32,919	634	9,379
Male	48,085	835	490	6,683	1,605	793	603	1,602	1,779	384	28,184	590	4,537
Female	23,043	863	353	5,464	779	1,383	1,160	2,736	321	363	4,735	44	4,842
White, non-Hispanic	50,615	1,107	501	7,907	2,136	1,304	1,070	2,526	1,432	535	24,313	523	7,261
Male	34,874	565	286	4,564	1,461	481	242	931	1,219	297	20,926	485	3,417
Female	15,741	542	215	3,343	675	823	828	1,595	213	238	3,387	38	3,844
Asian/Pacific Islander	3,662	173	100	785	9	248	53	262	165	35	1,447	0	385
Male	2,429	83	62	451	6	94	23	94	140	11	1,282	0	183
Female	1,233	90	38	334	3	154	30	168	25	24	165	0	202
Black, non-Hispanic	6,561	126	33	1,459	12	155	112	469	109	78	3,046	86	876
Male	4,083	50	14	622	10	60	38	171	85	33	2,455	80	465
Female	2,478	76	19	837	2	95	74	298	24	45	591	6	411
Hispanic	6,002	122	120	1,237	85	289	180	616	196	58	2,528	1	570
Male	3,866	59	68	651	53	86	47	216	168	29	2,175	1	313
Female	2,136	63	52	586	32	203	133	400	28	29	353	0	257
American Indian/Alaskan Native	859	33	13	144	65	37	37	143	22	14	262	24	65
Male	478	12	9	60	35	17	12	42	17	4	210	24	36
Female	381	21	4	84	30	20	25	101	5	10	52	0	29
Other/unknown race/ethnicity	1,644	62	27	284	25	61	253	162	43	13	611	0	103
Male	1,191	35	18	149	15	23	225	80	37	5	536	0	68
Female	453	27	9	135	10	38	28	82	6	8	75	0	35
Temporary resident	1,785	75	49	331	52	82	58	160	133	14	712	0	119
Male	1,164	31	33	186	25	32	16	68	113	5	600	0	55
Female	621	44	16	145	27	50	42	92	20	9	112	0	64

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Also, unlike in other degree tables, the science and engineering total includes degrees in science and engineering technologies.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Appendix table 3-4

Bachelor's degrees awarded, by sex and field: 1990–98

Sex and year	All fields	Science and engineering fields									All other fields
		Total science and engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural/ biological sciences	Psychology	Social sciences	Engineering	
	Number of degrees										
Total											
1990	1,062,151	329,094	13,425	2,776	14,674	27,695	46,451	54,018	105,350	64,705	733,057
1991	1,107,997	337,675	13,678	2,728	14,784	25,410	48,783	58,893	111,212	62,187	770,322
1992	1,150,072	355,265	13,875	3,201	14,931	24,958	54,193	64,033	118,133	61,941	794,807
1993	1,179,278	366,035	14,188	3,503	14,853	24,580	59,621	67,251	119,334	62,705	813,243
1994	1,183,141	373,261	14,655	3,868	14,632	24,553	65,268	69,768	117,505	63,012	809,880
1995	1,174,436	378,148	14,897	4,478	13,851	24,769	71,470	72,601	112,711	63,371	796,288
1996	1,179,815	384,674	15,396	4,457	13,076	24,545	78,469	73,828	111,789	63,114	795,141
1997	1,186,589	388,482	15,264	4,466	12,723	25,393	82,500	74,734	111,050	62,352	798,107
1998	1,199,579	390,618	15,273	4,321	12,094	27,674	85,079	74,457	110,806	60,914	808,961
Women											
1990	566,284	140,012	4,319	775	6,811	8,374	22,401	38,619	48,740	9,973	426,272
1991	599,045	148,347	4,425	782	6,980	7,514	23,776	42,738	52,467	9,665	450,698
1992	624,677	159,486	4,586	1,024	6,986	7,210	26,720	46,903	56,421	9,636	465,191
1993	641,742	165,720	4,764	1,050	6,999	6,951	29,182	49,222	57,571	9,981	476,022
1994	646,080	170,977	5,067	1,203	6,768	7,020	31,921	51,019	57,576	10,403	475,103
1995	643,290	175,931	5,292	1,524	6,491	7,063	35,555	52,963	56,093	10,950	467,359
1996	651,815	181,333	5,702	1,485	5,992	6,772	39,369	53,863	56,834	11,316	470,482
1997	661,307	187,011	5,882	1,542	5,889	6,903	42,533	55,243	57,549	11,470	474,296
1998	673,865	190,397	5,994	1,599	5,659	7,439	44,844	55,400	58,123	11,339	483,468
	Percent of degrees awarded to women										
1990	53.3	42.5	32.2	27.9	46.4	30.2	48.2	71.5	46.3	15.4	58.1
1991	54.1	43.9	32.4	28.7	47.2	29.6	48.7	72.6	47.2	15.5	58.5
1992	54.3	44.9	33.1	32.0	46.8	28.9	49.3	73.2	47.8	15.6	58.5
1993	54.4	45.3	33.6	30.0	47.1	28.3	48.9	73.2	48.2	15.9	58.5
1994	54.6	45.8	34.6	31.1	46.3	28.6	48.9	73.1	49.0	16.5	58.7
1995	54.8	46.5	35.5	34.0	46.9	28.5	49.7	73.0	49.8	17.3	58.7
1996	55.2	47.1	37.0	33.3	45.8	27.6	50.2	73.0	50.8	17.9	59.2
1997	55.7	48.1	38.5	34.5	46.3	27.2	51.6	73.9	51.8	18.4	59.4
1998	56.2	48.7	39.2	37.0	46.8	26.9	52.7	74.4	52.5	18.6	59.8

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-5

Bachelor's degrees awarded to women by all institutions and women's colleges and universities: 1966 and 1990–98

Field	1966	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Number of degrees awarded									
All institutions, all fields	222,971	566,284	599,045	624,677	641,742	646,080	643,290	651,815	661,307	673,865
Total science and engineering	45,634	140,012	148,347	159,486	165,720	170,977	175,931	181,333	187,011	190,397
Sciences	45,488	130,039	138,682	149,850	155,739	160,574	164,981	170,017	175,541	179,058
Physical sciences	2,172	4,319	4,425	4,586	4,764	5,067	5,292	5,702	5,882	5,994
Earth, atmospheric, and ocean sciences	161	775	782	1,024	1,050	1,203	1,524	1,485	1,542	1,599
Mathematics and statistics	6,689	6,811	6,980	6,986	6,999	6,768	6,491	5,992	5,889	5,659
Computer science	13	8,374	7,514	7,210	6,951	7,020	7,063	6,772	6,903	7,439
Agricultural sciences	131	2,992	3,140	3,949	4,338	4,941	5,637	6,504	7,267	7,743
Biological sciences	7,334	19,409	20,636	22,771	24,844	26,980	29,918	32,865	35,266	37,101
Psychology	6,928	38,619	42,738	46,903	49,222	51,019	52,963	53,863	55,243	55,400
Social sciences	22,060	48,740	52,467	56,421	57,571	57,576	56,093	56,834	57,549	58,123
Engineering	146	9,973	9,665	9,636	9,981	10,403	10,950	11,316	11,470	11,339
WCUs, all fields	10,127	13,866	14,480	15,194	15,076	15,015	14,787	15,592	15,736	15,978
Total science and engineering	3,217	4,170	4,348	4,736	4,638	4,697	4,567	4,916	4,892	5,026
Sciences	3,217	4,167	4,338	4,729	4,632	4,677	4,556	4,890	4,877	4,986
Physical sciences	265	199	194	205	181	217	222	256	256	215
Earth, atmospheric, and ocean sciences	9	17	19	23	25	29	48	24	26	29
Mathematics and statistics	439	217	250	250	276	273	221	232	245	236
Computer science	0	133	100	104	131	122	117	124	110	126
Agricultural sciences	0	9	20	19	32	36	54	58	50	46
Biological sciences	524	628	647	771	808	823	867	959	1,014	1,081
Psychology	490	1,036	1,099	1,252	1,221	1,263	1,256	1,407	1,351	1,410
Social sciences	1,490	1,928	2,009	2,105	1,958	1,914	1,771	1,830	1,825	1,843
Engineering	0	3	10	7	6	20	11	26	15	40
	WCU institution share of total bachelor's degrees to women (percent)									
Total, all fields	4.5	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4
Total science and engineering	7.0	3.0	2.9	3.0	2.8	2.7	2.6	2.7	2.6	2.6
Sciences	7.1	3.2	3.1	3.2	3.0	2.9	2.8	2.9	2.8	2.8
Physical sciences	12.2	4.6	4.4	4.5	3.8	4.3	4.2	4.5	4.4	3.6
Earth, atmospheric, and ocean sciences	5.6	2.2	2.4	2.2	2.4	2.4	3.1	1.6	1.7	1.8
Mathematics and statistics	6.6	3.2	3.6	3.6	3.9	4.0	3.4	3.9	4.2	4.2
Computer science	0.0	1.6	1.3	1.4	1.9	1.7	1.7	1.8	1.6	1.7
Agricultural sciences	0.0	0.3	0.6	0.5	0.7	0.7	1.0	0.9	0.7	0.6
Biological sciences	7.1	3.2	3.1	3.4	3.3	3.1	2.9	2.9	2.9	2.9
Psychology	7.1	2.7	2.6	2.7	2.5	2.5	2.4	2.6	2.4	2.5
Social sciences	6.8	4.0	3.8	3.7	3.4	3.3	3.2	3.2	3.2	3.2
Engineering	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.4

WCU women's college or university

NOTE: Data are for those institutions identified by the Women's College Coalition as women's colleges. Excludes women's colleges whose data are reported together with a coed institution or coordinate men's college. The following institutions were excluded for this reason: The Women's College at the University of Denver; Hartford College for Women; Newcomb College; Douglass College; Hobart-William Smith College; Stern College for Women; Russell Sage College; Radcliffe College; and Westhampton College.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-6

Bachelor's degrees awarded in science and engineering, by sex and detailed field: 1998

Field	Total	Males	Females	Percent awarded to females
Total science and engineering	390,618	200,221	190,397	48.7
Physical sciences	15,273	9,279	5,994	39.2
Astronomy	168	110	58	34.5
Chemistry	10,873	5,900	4,973	45.7
Physics	3,455	2,789	666	19.3
Other physical sciences	777	480	297	38.2
Earth, atmospheric, and ocean sciences	4,321	2,722	1,599	37.0
Atmospheric sciences	443	339	104	23.5
Earth sciences	3,665	2,262	1,403	38.3
Oceanography	213	121	92	43.2
Mathematics and statistics	12,094	6,435	5,659	46.8
Computer science	27,674	20,235	7,439	26.9
Agricultural sciences	17,967	10,224	7,743	43.1
Biological sciences	67,112	30,011	37,101	55.3
Psychology	74,457	19,057	55,400	74.4
Social sciences	110,806	52,683	58,123	52.5
Economics	18,244	12,453	5,791	31.7
Political science and public administration	36,654	19,334	17,320	47.3
Sociology	24,884	7,762	17,122	68.8
Anthropology	6,894	2,414	4,480	65.0
Linguistics	680	197	483	71.0
History of science	39	21	18	46.2
Area and ethnic studies	5,441	2,000	3,441	63.2
Other social sciences	17,970	8,502	9,468	52.7
Engineering	60,914	49,575	11,339	18.6
Aerospace engineering	1,247	1,050	197	15.8
Chemical engineering	6,721	4,525	2,196	32.7
Civil engineering	11,522	8,946	2,576	22.4
Electrical engineering	16,322	14,310	2,012	12.3
Industrial engineering	3,988	2,968	1,020	25.6
Materials engineering	1,007	772	235	23.3
Mechanical engineering	13,363	11,727	1,636	12.2
Other engineering	6,744	5,277	1,467	21.8

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Appendix table 3-7

First university degrees awarded, by sex and selected field and country: 1998

Country	All fields	Social and behavioral sciences	Life sciences	Physical sciences	Mathematics, statistics, and computers	Engineering	Agriculture
				Number			
Australia, total awards	124,762	5,316	7,958	1,210	5,454	5,375	1,354
Awards to women	72,777	3,248	4,290	417	1,530	788	557
Canada, total awards	124,034	27,107	7,608	2,807	4,905	6,559	1,305
Awards to women	72,985	17,631	4,386	782	1,461	1,250	439
France, total awards	293,984	NA	NA	NA	NA	NA	NA
Awards to women	168,821	NA	NA	NA	NA	NA	NA
Germany, total awards	188,820	7,870	4,178	9,764	10,189	25,383	3,793
Awards to women	81,886	4,121	2,398	2,723	2,483	1,606	1,516
Italy, total awards	132,968	12,703	7,961	3,114	4,748	15,243	1,218
Awards to women	73,037	7,820	5,050	1,364	2,474	2,157	332
Japan, total awards	531,866	NA	NA	NA	NA	NA	NA
Awards to women	185,912	NA	NA	NA	NA	NA	NA
Mexico, total awards	214,794	NA	NA	NA	NA	NA	NA
Awards to women	94,724	NA	NA	NA	NA	NA	NA
South Korea, total awards	196,566	9,848	3,504	9,077	8,447	42,547	7,041
Awards to women	80,932	3,411	2,028	3,143	3,996	4,890	2,682
Spain, total awards	207,898	13,142	3,808	6,030	8,531	15,156	4,371
Awards to women	121,828	7,925	2,412	2,959	2,880	3,170	1,779
Turkey, total awards	115,106	18,222	1,985	6,301	3,565	6,727	4,516
Awards to women	46,040	7,090	1,265	2,809	1,451	1,074	1,787
United Kingdom, total awards	258,877 *	69,045 *	13,211	12,519	16,088	34,350 *	3,214 *
Awards to women	136,734 *	38,256 *	8,369	4,951	4,451	5,740 *	1,748 *
United States, total awards	1,172,879 *	199,082	63,975	19,531	37,588	75,157	28,304 *
Awards to women	652,364 *	115,588	34,505	7,303	12,643	12,509	12,558 *
				Percent awarded to women			
Australia	58.3	61.1	53.9	34.5	28.1	14.7	41.1
Canada	58.8	65.0	57.6	27.9	29.8	19.1	33.6
France	57.4	NA	NA	NA	NA	NA	NA
Germany	43.4	52.4	57.4	27.9	24.4	6.3	40.0
Italy	54.9	61.6	63.4	43.8	52.1	14.2	27.3
Japan	35.0	NA	NA	NA	NA	NA	NA
Mexico	44.1	NA	NA	NA	NA	NA	NA
South Korea	41.2	34.6	57.9	34.6	47.3	11.5	38.1
Spain	58.6	60.3	63.3	49.1	33.8	20.9	40.7
Turkey	40.0	38.9	63.7	44.6	40.7	16.0	39.6
United Kingdom	52.8 *	55.4 *	63.3	39.5	27.7	16.7 *	54.4 *
United States	55.6 *	58.1	53.9	37.4	33.6	16.6	44.4 *

* totals shown include more subfields than do other countries

NA not available

SOURCE: Organisation for Economic Co-operation and Development, *Education at a Glance* (Paris, 2000).

Appendix table 3-8

Bachelor's degrees awarded in science and engineering, by citizenship, race/ethnicity, and field: 1990–98

Page 1 of 3

Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
All recipients, all fields	1,062,151	1,107,997	1,150,072	1,179,278	1,183,141	1,174,436	1,179,815	1,186,589	1,199,579
Total science and engineering	345,793	356,785	376,933	388,435	395,380	399,809	405,921	408,749	411,286
Physical sciences[a]	16,203	16,407	17,076	17,691	18,525	19,375	19,853	19,730	19,594
Mathematics	14,674	14,784	14,851	14,870	14,431	13,759	13,201	12,869	12,363
Computer science	27,695	25,410	24,854	24,477	24,458	24,662	24,405	24,975	27,041
Agricultural sciences	8,622	8,643	10,492	11,827	13,165	14,847	16,669	17,666	18,211
Biological sciences	38,040	40,351	43,835	47,877	52,213	56,804	61,998	65,061	67,047
Psychology	54,018	58,893	64,043	67,251	69,768	72,601	73,828	74,734	74,457
Social sciences	121,838	130,111	139,884	141,772	139,858	134,431	132,901	131,408	131,703
Engineering	64,703	62,186	61,898	62,670	62,962	63,330	63,066	62,306	60,870
Non-S&E	716,358	751,212	773,139	790,843	787,761	774,627	773,894	777,840	788,293
U.S. citizens and permanent residents, all fields	1,035,598	1,078,340	1,121,525	1,146,907	1,148,914	1,137,424	1,142,028	1,147,815	1,160,692
Total science and engineering	333,475	344,061	364,695	374,633	381,451	385,055	391,074	393,952	396,558
Physical sciences[a]	15,608	15,799	16,469	16,927	17,812	18,652	19,167	19,059	18,919
Mathematics	14,150	14,206	14,259	14,318	13,869	13,166	12,643	12,343	11,907
Computer science	25,629	23,373	22,880	22,273	22,185	22,367	22,225	22,976	24,912
Agricultural sciences	8,348	8,373	10,289	11,478	12,919	14,589	16,397	17,411	17,917
Biological sciences	37,173	39,288	42,842	46,660	51,058	55,523	60,633	63,601	65,625
Psychology	53,493	58,202	63,379	66,421	68,913	71,659	72,812	73,685	73,287
Social sciences	119,288	127,216	136,902	138,391	136,273	130,579	128,893	127,368	127,764
Engineering	59,786	57,604	57,675	58,165	58,422	58,520	58,304	57,509	56,227
Non-S&E	702,123	734,279	756,830	772,274	767,463	752,369	750,954	753,863	764,134
Whites, non-Hispanic, all fields	856,686	892,363	921,453	931,603	918,124	892,785	884,128	877,759	878,018
Total science and engineering	270,225	278,190	292,614	297,171	297,616	294,773	295,082	292,252	290,207
Physical sciences[a]	13,055	13,145	13,678	13,941	14,616	14,952	15,088	14,920	14,566
Mathematics	11,765	11,649	11,723	11,669	11,089	10,343	9,823	9,484	9,045
Computer science	18,918	17,349	16,844	16,155	15,816	15,532	15,470	15,626	16,670
Agricultural sciences	7,658	7,704	9,382	10,556	11,733	13,120	14,646	15,516	15,832
Biological sciences	28,814	30,264	32,506	35,080	37,942	40,628	43,680	45,325	45,854
Psychology	44,136	48,134	52,066	53,763	54,870	55,914	55,905	55,346	54,225
Social sciences	98,385	104,783	111,389	111,154	106,863	100,558	97,372	94,411	93,482
Engineering	47,494	45,162	45,026	44,853	44,687	43,726	43,098	41,624	40,533
Non-S&E	586,461	614,173	628,839	634,432	620,508	598,012	589,046	585,507	587,811
Asians/Pacific Islanders, all fields	38,027	41,725	46,616	50,587	54,675	59,295	63,117	67,358	69,988
Total science and engineering	19,437	20,552	22,635	24,504	26,420	29,128	31,031	33,139	34,568
Physical sciences[a]	937	983	1,001	1,098	1,096	1,347	1,559	1,620	1,676
Mathematics	874	915	857	915	926	965	935	877	856
Computer science	2,144	2,010	2,082	2,245	2,247	2,365	2,448	2,767	3,158
Agricultural sciences	126	128	154	163	173	287	312	401	444
Biological sciences	3,245	3,559	4,402	5,103	5,959	7,043	7,958	8,535	8,867
Psychology	1,630	1,885	2,150	2,538	2,777	3,331	3,666	4,067	4,267
Social sciences	4,469	4,852	5,724	6,035	6,726	7,005	7,354	7,787	8,298
Engineering	6,012	6,220	6,265	6,407	6,516	6,785	6,799	7,085	7,002
Non-S&E	18,590	21,173	23,981	26,083	28,255	30,167	32,086	34,219	35,420

See explanatory information and SOURCE at end of table.

Appendix table 3-8

Bachelor's degrees awarded in science and engineering, by citizenship, race/ethnicity, and field: 1990-98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Blacks, non-Hispanic, all fields	59,301	65,009	71,311	76,667	82,316	85,287	89,554	92,067	95,878
Total science and engineering	18,230	19,987	22,431	24,421	26,289	27,528	29,055	30,444	31,398
Physical sciences[a]	650	753	816	836	921	1,034	1,100	1,110	1,127
Mathematics	720	811	904	965	992	995	981	1,071	1,030
Computer science	2,247	1,997	2,090	2,213	2,398	2,498	2,415	2,370	2,580
Agricultural sciences	171	162	206	219	268	263	363	387	426
Biological sciences	1,994	2,111	2,385	2,739	2,980	3,231	3,811	4,123	4,550
Psychology	3,150	3,688	4,179	4,618	5,236	5,741	6,028	6,647	6,852
Social sciences	7,226	8,236	9,489	10,254	10,835	10,921	11,357	11,660	11,815
Engineering	2,072	2,229	2,382	2,577	2,659	2,845	3,000	3,076	3,018
Non-S&E	41,071	45,022	48,880	52,246	56,027	57,759	60,499	61,623	64,480
Hispanics, all fields	43,864	49,027	53,007	57,845	62,683	66,691	71,015	74,938	78,125
Total science and engineering	13,918	15,351	17,391	18,442	20,529	22,190	23,791	25,266	26,725
Physical sciences[a]	522	533	546	599	733	800	872	853	914
Mathematics	413	480	482	470	543	536	585	581	642
Computer science	1,085	1,215	1,173	1,096	1,135	1,307	1,280	1,267	1,410
Agricultural sciences	218	213	214	217	336	386	506	561	632
Biological sciences	2,119	2,264	2,477	2,652	2,901	3,090	3,521	3,793	4,283
Psychology	2,405	2,746	3,247	3,587	3,990	4,543	5,036	5,282	5,509
Social sciences	4,645	5,334	6,519	6,860	7,748	7,877	8,260	8,804	9,210
Engineering	2,511	2,566	2,733	2,961	3,143	3,651	3,731	4,125	4,125
Non-S&E	29,946	33,676	35,616	39,403	42,154	44,501	47,224	49,672	51,400
American Indians/Alaskan Natives, all fields	4,212	4,486	5,130	5,574	6,064	6,454	6,813	7,238	7,706
Total science and engineering	1,271	1,344	1,561	1,819	2,004	2,126	2,268	2,419	2,533
Physical sciences[a]	73	69	63	93	83	98	104	100	106
Mathematics	45	43	46	55	59	58	53	56	66
Computer science	84	80	79	81	78	110	89	97	106
Agricultural sciences	59	53	60	64	109	124	139	148	153
Biological sciences	130	176	181	211	246	285	316	339	399
Psychology	211	235	311	335	394	407	470	496	515
Social sciences	523	530	639	804	817	823	854	921	935
Engineering	146	158	182	176	218	221	243	262	253
Non-S&E	2,941	3,142	3,569	3,755	4,060	4,328	4,545	4,819	5,173
Unknown race/ethnicity, all fields	33,508	25,730	24,008	24,631	25,052	26,912	27,401	28,455	30,977
Total science and engineering	10,394	8,637	8,063	8,276	8,593	9,310	9,847	10,432	11,127
Physical sciences[a]	371	316	365	360	363	421	444	456	530
Mathematics	333	308	247	244	260	269	266	274	268
Computer science	1,151	722	612	483	511	555	523	849	988
Agricultural sciences	116	113	273	250	300	409	431	398	430
Biological sciences	871	914	891	875	1,030	1,246	1,347	1,486	1,672
Psychology	1,961	1,514	1,426	1,580	1,646	1,723	1,707	1,847	1,919
Social sciences	4,040	3,481	3,142	3,284	3,284	3,395	3,696	3,785	4,024
Engineering	1,551	1,269	1,107	1,191	1,199	1,292	1,433	1,337	1,296
Non-S&E	23,114	17,093	15,945	16,355	16,459	17,602	17,554	18,023	19,850

See explanatory information and SOURCE at end of table.

Appendix table 3-8

Bachelor's degrees awarded in science and engineering, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Temporary residents, all fields	26,553	29,657	28,547	32,371	34,227	37,012	37,787	38,774	38,887
Total science and engineering	12,318	12,724	12,238	13,802	13,929	14,754	14,847	14,797	14,728
Physical sciences[a]	595	608	687	764	713	723	686	671	675
Mathematics	524	578	592	552	562	593	558	526	456
Computer science	2,066	2,037	1,974	2,204	2,273	2,295	2,180	1,999	2,129
Agricultural sciences	867	1,063	983	1,217	1,155	1,281	1,365	1,460	1,422
Biological sciences	274	270	203	349	246	258	272	255	294
Psychology	2,550	2,895	2,982	3,381	3,585	3,852	4,008	4,040	3,939
Social sciences	525	681	664	830	855	942	1,016	1,049	1,170
Engineering	4,917	4,582	4,223	4,505	4,540	4,810	4,762	4,797	4,643
Non-S&E	14,235	16,933	16,309	18,569	20,298	22,258	22,940	23,977	24,159

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-9

Bachelor's degrees awarded to U.S. citizens and permanent residents, by S&E field and race/ethnicity: 1990–98

(Percent)

Page 1 of 2

Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
U.S. citizens and permanent residents, all fields	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total science and engineering	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Physical sciences[a]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mathematics	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Computer science	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agricultural sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Biological sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Psychology	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Social sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Engineering	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Whites, non-Hispanic, all fields	82.7	82.8	82.2	81.2	79.9	78.5	77.4	76.5	75.6
Total science and engineering	81.0	80.9	80.2	79.3	78.0	76.6	75.5	74.2	73.2
Physical sciences[a]	83.6	83.2	83.1	82.4	82.1	80.2	78.7	78.3	77.0
Mathematics	83.1	82.0	82.2	81.5	80.0	78.6	77.7	76.8	76.0
Computer science	73.8	74.2	73.6	72.5	71.3	69.4	69.6	68.0	66.9
Agricultural sciences	91.7	92.0	91.2	92.0	90.8	89.9	89.3	89.1	88.4
Biological sciences	77.5	77.0	75.9	75.2	74.3	73.2	72.0	71.3	69.9
Psychology	82.5	82.7	82.2	80.9	79.6	78.0	76.8	75.1	74.0
Social sciences	82.5	82.4	81.4	80.3	78.4	77.0	75.5	74.1	73.2
Engineering	79.4	78.4	78.1	77.1	76.5	74.7	73.9	72.4	72.1
Asians/Pacific Islanders, all fields	3.7	3.9	4.2	4.4	4.8	5.2	5.5	5.9	6.0
Total science and engineering	5.8	6.0	6.2	6.5	6.9	7.6	7.9	8.4	8.7
Physical sciences[a]	6.0	6.2	6.1	6.5	6.2	7.2	8.1	8.5	8.9
Mathematics	6.2	6.4	6.0	6.4	6.7	7.3	7.4	7.1	7.2
Computer science	8.4	8.6	9.1	10.1	10.1	10.6	11.0	12.0	12.7
Agricultural sciences	1.5	1.5	1.5	1.4	1.3	2.0	1.9	2.3	2.5
Biological sciences	8.7	9.1	10.3	10.9	11.7	12.7	13.1	13.4	13.5
Psychology	3.0	3.2	3.4	3.8	4.0	4.6	5.0	5.5	5.8
Social sciences	3.7	3.8	4.2	4.4	4.9	5.4	5.7	6.1	6.5
Engineering	10.1	10.8	10.9	11.0	11.2	11.6	11.7	12.3	12.5
Blacks, non-Hispanic, all fields	5.7	6.0	6.4	6.7	7.2	7.5	7.8	8.0	8.3
Total science and engineering	5.5	5.8	6.2	6.5	6.9	7.1	7.4	7.7	7.9
Physical sciences[a]	4.2	4.8	5.0	4.9	5.2	5.5	5.7	5.8	6.0
Mathematics	5.1	5.7	6.3	6.7	7.2	7.6	7.8	8.7	8.7
Computer science	8.8	8.5	9.1	9.9	10.8	11.2	10.9	10.3	10.4
Agricultural sciences	2.0	1.9	2.0	1.9	2.1	1.8	2.2	2.2	2.4
Biological sciences	5.4	5.4	5.6	5.9	5.8	5.8	6.3	6.5	6.9
Psychology	5.9	6.3	6.6	7.0	7.6	8.0	8.3	9.0	9.3
Social sciences	6.1	6.5	6.9	7.4	8.0	8.4	8.8	9.2	9.2
Engineering	3.5	3.9	4.1	4.4	4.6	4.9	5.1	5.3	5.4

See explanatory information and SOURCE at end of table.

Appendix table 3-9

Bachelor's degrees awarded to U.S. citizens and permanent residents, by S&E field and race/ethnicity: 1990–98

(Percent)

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Hispanics, all fields	4.2	4.5	4.7	5.0	5.5	5.9	6.2	6.5	6.7
Total science and engineering	4.2	4.5	4.8	4.9	5.4	5.8	6.1	6.4	6.7
Physical sciences[a]	3.3	3.4	3.3	3.5	4.1	4.3	4.5	4.5	4.8
Mathematics	2.9	3.4	3.4	3.3	3.9	4.1	4.6	4.7	5.4
Computer science	4.2	5.2	5.1	4.9	5.1	5.8	5.8	5.5	5.7
Agricultural sciences	2.6	2.5	2.1	1.9	2.6	2.6	3.1	3.2	3.5
Biological sciences	5.7	5.8	5.8	5.7	5.7	5.6	5.8	6.0	6.5
Psychology	4.5	4.7	5.1	5.4	5.8	6.3	6.9	7.2	7.5
Social sciences	3.9	4.2	4.8	5.0	5.7	6.0	6.4	6.9	7.2
Engineering	4.2	4.5	4.7	5.1	5.4	6.2	6.4	7.2	7.3
American Indians/Alaskan Natives, all fields	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7
Total science and engineering	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6
Physical sciences[a]	0.5	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6
Mathematics	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.6
Computer science	0.3	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.4
Agricultural sciences	0.7	0.6	0.6	0.6	0.8	0.8	0.8	0.9	0.9
Biological sciences	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6
Psychology	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Social sciences	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.7
Engineering	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.4
Unknown race/ethnicity, all fields	3.2	2.4	2.1	2.1	2.2	2.4	2.4	2.5	2.7
Total science and engineering	3.1	2.5	2.2	2.2	2.3	2.4	2.5	2.6	2.8
Physical sciences[a]	2.4	2.0	2.2	2.1	2.0	2.3	2.3	2.4	2.8
Mathematics	2.4	2.2	1.7	1.7	1.9	2.0	2.1	2.2	2.3
Computer science	4.5	3.1	2.7	2.2	2.3	2.5	2.4	3.7	4.0
Agricultural sciences	1.4	1.3	2.7	2.3	2.3	2.8	2.6	2.3	2.4
Biological sciences	2.3	2.3	2.1	1.9	2.0	2.2	2.2	2.3	2.5
Psychology	3.7	2.6	2.2	2.4	2.4	2.4	2.3	2.5	2.6
Social sciences	3.4	2.7	2.3	2.4	2.4	2.6	2.9	3.0	3.1
Engineering	2.6	2.2	1.9	2.0	2.1	2.2	2.5	2.3	2.3

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Racial/ethnic data for degree recipients were collected on broad fields of study only until 1994; thus, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-10

Bachelor's degrees awarded in engineering, by citizenship, race/ethnicity, and sex: 1990–2000

Year	Total	U.S. citizens and permanent residents							Temporary residents
		Men	Women	Whites, non-Hispanic	Asians/ Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/ Alaskan Natives	
1990	65,967	55,837	10,130	50,099	5,989	2,173	2,473	112	5,121
1991	63,986	53,970	10,016	48,028	6,305	2,304	2,663	146	4,540
1992	63,653	53,681	9,972	47,540	6,479	2,374	2,708	163	4,389
1993	65,001	54,548	10,453	47,976	6,764	2,637	2,845	175	4,604
1994	64,946	54,146	10,800	47,136	6,881	2,769	3,045	207	4,908
1995	64,749	53,446	11,303	46,264	7,056	2,897	3,409	230	4,893
1996	65,267	53,530	11,737	45,952	7,333	3,120	3,557	263	5,042
1997	65,091	52,931	12,160	44,976	7,625	3,203	4,005	265	5,017
1998	63,271	51,474	11,797	43,623	7,131	3,144	3,939	351	5,083
1999	62,500	50,140	12,360	42,650	7,226	3,171	4,073	328	5,052
2000	63,635	50,495	13,140	43,437	7,529	3,150	4,124	347	5,048

SOURCE: American Association of Engineering Societies, Engineering Workforce Commission, Engineering and Technology Degrees, 1990–2000.

Appendix table 3-11

Bachelor's degrees awarded, by detailed field, citizenship, and race/ethnicity: 1998

Field	Total, all recipients	U.S. citizens and permanent residents							Temporary residents
		Total	Whites, non-Hispanic	Asians/ Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/ Alaskan Natives	Unknown race/ ethnicity	
Total, all fields	1,199,579	1,160,692	878,018	69,988	95,878	78,125	7,706	30,977	38,887
Total science and engineering	390,618	375,909	272,561	34,004	30,751	25,712	2,392	10,489	14,709
Sciences	329,704	319,638	231,987	27,002	27,732	21,587	2,138	9,192	10,066
Physical sciences	15,273	14,680	10,763	1,584	1,057	796	81	399	593
Astronomy	168	157	127	12	2	11	0	5	11
Chemistry	10,873	10,488	7,370	1,337	824	640	64	253	385
Physics	3,455	3,277	2,652	208	179	117	14	107	178
Other physical sciences	777	758	614	27	52	28	3	34	19
Earth, atmospheric, and ocean sciences	4,321	4,239	3,803	92	70	118	25	131	82
Atmospheric sciences	443	439	416	5	7	8	0	3	4
Geosciences	3,665	3,590	3,207	76	60	98	25	124	75
Oceanography	213	210	180	11	3	12	0	4	3
Mathematics	12,094	11,641	8,903	834	966	604	65	269	453
Computer sciences	27,674	25,537	17,069	3,220	2,666	1,473	112	997	2,137
Agricultural sciences	17,967	17,674	15,616	439	409	631	151	428	293
Biological sciences	67,112	65,689	45,912	8,869	4,553	4,283	399	1,673	1,423
Psychology	74,457	73,287	54,225	4,267	6,852	5,509	515	1,919	1,170
Social sciences	110,806	106,891	75,696	7,697	11,159	8,173	790	3,376	3,915
Economics	18,244	16,461	11,599	2,430	979	851	69	533	1,783
Political science	36,654	35,475	25,624	2,141	3,638	2,828	215	1,029	1,179
Sociology	24,884	24,575	16,450	1,212	3,944	2,081	197	691	309
Other social sciences	31,024	30,380	22,023	1,914	2,598	2,413	309	1,123	644
Engineering	60,914	56,271	40,574	7,002	3,019	4,125	254	1,297	4,643
Aerospace engineering	1,247	1,110	877	96	35	78	10	14	137
Chemical engineering	6,721	6,214	4,405	897	385	393	31	103	507
Civil engineering	11,522	11,012	8,481	909	401	920	62	239	510
Electrical engineering	16,322	14,485	9,174	2,757	1,047	1,070	53	384	1,837
Industrial engineering	3,988	3,502	2,333	369	262	450	15	73	486
Materials engineering	1,007	974	760	119	32	42	3	18	33
Mechanical engineering	13,363	12,566	9,656	1,128	548	866	47	321	797
Other engineering	6,744	6,408	4,888	727	309	306	33	145	336
Non-S&E	808,961	784,783	605,457	35,984	65,127	52,413	5,314	20,488	24,178

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected by detailed field beginning in 1995, the data in this table do correspond to National Science Foundation (NSF) field taxonomies. They therefore match other tables in this report showing bachelor's degrees by sex, but do not match data in tables showing bachelor's degrees by race/ethnicity over time. The largest effect is in the social sciences: NSF excludes history and includes public administration and public policy, linguistics, gerontology, and agricultural economics in this category.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics, data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Appendix table 3-12

Bachelor's degrees awarded to blacks by all institutions and historically black colleges and universities: 1990–98

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Number of degrees awarded								
All institutions, total science and engineering	18,230	19,987	22,431	24,421	26,289	27,528	29,055	30,444	31,398
Sciences	16,158	17,758	20,069	21,844	23,630	24,683	26,055	27,368	28,380
Physical sciences[a]	650	753	816	836	921	1,034	1,100	1,110	1,127
Mathematics and statistics	720	811	904	965	992	995	981	1,071	1,030
Computer science	2,247	1,997	2,090	2,213	2,398	2,498	2,415	2,370	2,580
Agricultural sciences	171	162	206	219	268	263	363	387	426
Biological sciences	1,994	2,111	2,385	2,739	2,980	3,231	3,811	4,123	4,550
Psychology	3,150	3,688	4,179	4,618	5,236	5,741	6,028	6,647	6,852
Social sciences	7,226	8,236	9,489	10,254	10,835	10,921	11,357	11,660	11,815
Engineering	2,072	2,229	2,362	2,577	2,659	2,845	3,000	3,076	3,018
HBCUs, total science and engineering	5,190	5,679	6,363	7,368	7,804	8,361	8,980	9,071	9,151
Sciences	4,666	5,090	5,769	6,668	7,114	7,563	8,086	8,166	8,308
Physical sciences[a]	296	358	376	390	421	471	547	503	485
Mathematics and statistics	307	369	420	463	449	466	443	478	442
Computer science	899	748	780	904	904	967	979	834	904
Agricultural sciences	87	96	117	109	134	123	197	216	220
Biological sciences	764	792	906	1,155	1,197	1,357	1,628	1,841	1,920
Psychology	662	841	969	1,140	1,308	1,432	1,512	1,653	1,636
Social sciences	1,651	1,886	2,201	2,507	2,701	2,747	2,780	2,641	2,701
Engineering	524	589	594	700	690	798	894	905	843
	HBCU share of total bachelor's degrees to blacks (percent)								
Total science and engineering	28.5	28.4	28.4	30.2	29.7	30.4	30.9	29.8	29.1
Sciences	28.9	28.7	28.7	30.5	30.1	30.6	31.0	29.8	29.3
Physical sciences[a]	45.5	47.5	46.1	46.7	45.7	45.6	49.7	45.3	43.0
Mathematics and statistics	42.6	45.5	46.5	48.0	45.3	46.8	45.2	44.6	42.9
Computer science	40.0	37.5	37.3	40.8	37.7	38.7	40.5	35.2	35.0
Agricultural sciences	50.9	59.3	56.8	49.8	50.0	46.8	54.3	55.8	51.6
Biological sciences	38.3	37.5	38.0	42.2	40.2	42.0	42.7	44.7	42.2
Psychology	21.0	22.8	23.2	24.7	25.0	24.9	25.1	24.9	23.9
Social sciences	22.8	22.9	23.2	24.4	24.9	25.2	24.5	22.7	22.9
Engineering	25.3	26.4	25.1	27.2	25.9	28.0	29.8	29.4	27.9

HBCU historically black college or university

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Racial/ethnic data for degree recipients were collected on broad fields of study only until 1994; thus, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-13

Bachelor's degrees awarded to Hispanics by all institutions and Hispanic-serving institutions: 1990–98

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Number of degrees awarded								
All institutions, total science and engineering	13,918	15,351	17,391	18,442	20,529	22,190	23,791	25,266	26,725
Sciences	11,407	12,785	14,658	15,481	17,386	18,539	20,060	21,141	22,600
Physical sciences[a]	522	533	546	599	733	800	872	853	914
Mathematics and statistics	413	480	482	470	543	536	585	581	642
Computer science	1,085	1,215	1,173	1,096	1,135	1,307	1,280	1,267	1,410
Agricultural sciences	218	213	214	217	336	386	506	561	632
Biological sciences	2,119	2,264	2,477	2,652	2,901	3,090	3,521	3,793	4,283
Psychology	2,405	2,746	3,247	3,587	3,990	4,543	5,036	5,282	5,509
Social sciences	4,645	5,334	6,519	6,860	7,748	7,877	8,260	8,804	9,210
Engineering	2,511	2,566	2,733	2,961	3,143	3,651	3,731	4,125	4,125
HSIs, total science and engineering	4,966	5,507	5,678	6,139	6,742	7,382	7,855	8,437	8,696
Sciences	3,969	4,517	4,551	4,956	5,569	5,817	6,353	6,733	7,107
Physical sciences[a]	245	233	239	259	321	398	422	400	427
Mathematics and statistics	152	201	118	145	168	178	193	209	200
Computer science	483	587	515	478	470	510	512	482	539
Agricultural sciences	94	89	43	30	98	125	158	188	190
Biological sciences	1,104	1,147	1,184	1,255	1,294	1,285	1,496	1,602	1,816
Psychology	848	974	1,078	1,214	1,367	1,479	1,626	1,695	1,769
Social sciences	1,043	1,286	1,374	1,575	1,851	1,842	1,946	2,157	2,166
Engineering	997	990	1,127	1,183	1,173	1,565	1,502	1,704	1,589
	HSI share of total bachelor's degrees to Hispanics (percent)								
Total science and engineering	35.7	35.9	32.6	33.3	32.8	33.3	33.0	33.4	32.5
Sciences	34.8	35.3	31.0	32.0	32.0	31.4	31.7	31.8	31.4
Physical sciences[a]	46.9	43.7	43.8	43.2	43.8	49.8	48.4	46.9	46.7
Mathematics and statistics	36.8	41.9	24.5	30.9	30.9	33.2	33.0	36.0	31.2
Computer science	44.5	48.3	43.9	43.6	41.4	39.0	40.0	38.0	38.2
Agricultural sciences	43.1	41.8	20.1	13.8	29.2	32.4	31.2	33.5	30.1
Biological sciences	52.1	50.7	47.8	47.3	44.6	41.6	42.5	42.2	42.4
Psychology	35.3	35.5	33.2	33.8	34.3	32.6	32.3	32.1	32.1
Social sciences	22.5	24.1	21.1	23.0	23.9	23.4	23.6	24.5	23.5
Engineering	39.7	38.6	41.2	40.0	37.3	42.9	40.3	41.3	38.5

HSI Hispanic-serving institution

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Racial/ethnic data for degree recipients were collected on broad fields of study only until 1994; thus, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-14

Bachelor's degrees awarded to American Indians/Alaskan Natives by all institutions and tribal institutions: 1990–98

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998
	Number of degrees awarded								
All institutions, total science and engineering	1,271	1,344	1,561	1,819	2,004	2,126	2,268	2,419	2,533
Sciences	1,125	1,186	1,379	1,643	1,786	1,905	2,025	2,157	2,280
Physical sciences[a]	73	69	63	93	83	98	104	100	106
Mathematics and statistics	45	43	46	55	59	58	53	56	66
Computer science	84	80	79	81	78	110	89	97	106
Agricultural sciences	59	53	60	64	109	124	139	148	153
Biological sciences	130	176	181	211	246	285	316	339	399
Psychology	211	235	311	335	394	407	470	496	515
Social sciences	523	530	639	804	817	823	854	921	935
Engineering	146	158	182	176	218	221	243	262	253
Tribal institutions, total science and engineering	5	5	0	0	7	7	14	24	16
Sciences	5	5	0	0	7	7	14	24	16
Physical sciences[a]	0	0	0	0	0	0	0	0	0
Mathematics and statistics	0	0	0	0	0	0	0	0	0
Computer science	0	0	0	0	0	0	0	0	0
Agricultural sciences	0	0	0	0	0	0	2	7	3
Biological sciences	0	0	0	0	0	0	0	0	0
Psychology	0	0	0	0	0	0	0	0	0
Social sciences	5	5	0	0	7	7	12	17	13
Engineering	0	0	0	0	0	0	0	0	0
	Tribal institution share of total bachelor's degrees to American Indians/Alaskan Natives (percent)								
Total science and engineering	0.4	0.4	0.0	0.0	0.3	0.3	0.6	1.0	0.6
Sciences	0.4	0.4	0.0	0.0	0.4	0.4	0.7	1.1	0.7
Physical sciences[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mathematics and statistics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Computer science	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Agricultural sciences	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.7	2.0
Biological sciences	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Psychology	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social sciences	1.0	0.9	0.0	0.0	0.9	0.9	1.4	1.8	1.4
Engineering	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Racial/ethnic data for degree recipients were collected on broad fields of study only until 1994; thus, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 3-15

Bachelor's degrees awarded to women, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total, all fields	566,284	599,045	624,677	641,742	646,080	643,290	651,815	661,307	673,865
Science and engineering	145,877	155,286	167,663	174,047	178,888	183,731	189,307	194,420	198,115
Sciences	135,904	145,622	158,035	164,073	168,495	172,790	178,006	182,960	186,786
Physical sciences[a]	5,094	5,208	5,610	5,814	6,272	6,816	7,187	7,424	7,593
Mathematics	6,811	6,980	6,928	7,011	6,677	6,441	6,025	5,931	5,745
Computer science	8,374	7,514	7,184	6,912	6,992	7,034	6,739	6,809	7,245
Agricultural sciences	3,028	3,166	3,980	4,384	4,996	5,715	6,591	7,330	7,816
Biological sciences	19,409	20,636	22,728	24,766	26,899	29,848	32,809	35,222	37,065
Psychology	38,619	42,738	46,906	49,222	51,019	52,963	53,863	55,243	55,400
Social sciences	54,569	59,380	64,699	65,964	65,640	63,973	64,792	65,001	65,922
Engineering	9,973	9,664	9,628	9,974	10,393	10,941	11,301	11,460	11,329
Non-S&E	420,407	443,759	457,014	467,695	467,192	459,559	462,508	466,887	475,750
U.S. citizens and permanent residents, all fields	556,639	587,615	613,236	628,423	631,596	627,394	635,459	644,156	656,430
Science and engineering	142,495	151,545	163,766	169,639	174,421	178,911	184,246	189,185	192,864
Sciences	133,012	142,351	154,609	160,129	164,576	168,536	173,565	178,401	182,163
Physical sciences[a]	4,914	5,011	5,420	5,575	6,026	6,566	6,938	7,184	7,347
Mathematics	6,611	6,776	6,694	6,804	6,479	6,206	5,853	5,725	5,581
Computer science	7,780	6,940	6,629	6,309	6,386	6,407	6,132	6,241	6,623
Agricultural sciences	2,968	3,099	3,910	4,266	4,907	5,627	6,479	7,238	7,692
Biological sciences	18,973	20,117	22,214	24,118	26,319	29,189	32,057	34,431	36,322
Psychology	38,254	42,225	46,417	48,612	50,371	52,253	53,122	54,449	54,526
Social sciences	53,512	58,183	63,325	64,445	64,088	62,288	62,984	63,133	64,072
Engineering	9,483	9,194	9,157	9,510	9,845	10,375	10,681	10,784	10,701
Non-S&E	414,144	436,070	449,470	458,784	457,175	448,483	451,213	454,971	463,566
Whites, non-Hispanic, all fields	455,662	481,618	498,936	504,363	497,913	485,630	484,996	485,218	489,011
Science and engineering	112,550	119,503	128,394	131,108	132,371	133,042	135,193	136,131	136,825
Sciences	105,589	113,033	121,881	124,499	125,514	126,101	128,072	129,086	129,912
Physical sciences[a]	3,876	3,942	4,248	4,327	4,658	4,946	5,122	5,225	5,276
Mathematics	5,512	5,530	5,468	5,538	5,169	4,887	4,584	4,399	4,194
Computer science	4,944	4,433	4,273	3,826	3,794	3,739	3,546	3,556	3,679
Agricultural sciences	2,704	2,812	3,542	3,875	4,400	4,968	5,678	6,290	6,617
Biological sciences	14,326	15,090	16,476	17,787	19,060	20,838	22,615	23,937	24,946
Psychology	31,504	34,857	38,059	39,261	39,979	40,673	40,735	40,826	40,307
Social sciences	42,723	46,369	49,815	49,885	48,454	46,050	45,792	44,853	44,893
Engineering	6,961	6,470	6,513	6,609	6,857	6,941	7,121	7,045	6,913
Non-S&E	343,112	362,115	370,542	373,255	365,542	352,588	349,803	349,087	352,186

See explanatory information and SOURCE at end of table.

Appendix table 3-15

Bachelor's degrees awarded to women, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Asians/Pacific Islanders, all fields	18,930	20,952	23,426	25,768	28,255	30,947	33,163	35,626	37,400
Science and engineering	7,909	8,610	9,437	10,372	11,453	13,089	14,016	15,225	16,073
Sciences	6,724	7,359	8,239	9,095	10,172	11,644	12,580	13,751	14,506
Physical sciences[a]	345	377	386	423	448	563	651	739	773
Mathematics	383	433	371	413	403	446	396	383	394
Computer science	809	742	709	753	771	782	751	837	882
Agricultural sciences	63	71	75	85	91	157	173	232	253
Biological sciences	1,672	1,823	2,172	2,470	2,967	3,576	4,080	4,528	4,686
Psychology	1,139	1,321	1,530	1,800	1,970	2,362	2,541	2,862	3,044
Social sciences	2,313	2,592	2,996	3,151	3,522	3,758	3,988	4,170	4,474
Engineering	1,185	1,251	1,198	1,277	1,281	1,445	1,436	1,474	1,567
Non-S&E	11,021	12,342	13,989	15,396	16,802	17,858	19,147	20,401	21,327
Blacks, non-Hispanic, all fields	36,711	40,771	44,793	48,293	52,210	54,289	57,331	59,341	62,225
Science and engineering	10,400	11,539	13,056	14,322	15,483	16,401	17,355	18,497	19,248
Sciences	9,744	10,794	12,308	13,509	14,608	15,402	16,319	17,440	18,207
Physical sciences[a]	358	362	435	466	457	539	618	644	606
Mathematics	378	431	530	521	535	519	513	561	542
Computer science	1,173	1,026	998	1,164	1,237	1,257	1,197	1,158	1,257
Agricultural sciences	61	62	93	93	131	142	176	201	237
Biological sciences	1,336	1,415	1,636	1,856	2,053	2,250	2,575	2,819	3,102
Psychology	2,356	2,809	3,197	3,519	4,004	4,339	4,610	5,056	5,308
Social sciences	4,082	4,689	5,419	5,890	6,191	6,356	6,630	7,001	7,155
Engineering	656	745	748	813	875	999	1,036	1,057	1,041
Non-S&E	26,311	29,232	31,737	33,971	36,727	37,888	39,976	40,844	42,977
Hispanics, all fields	25,181	28,246	30,981	34,020	36,823	38,816	41,680	44,388	46,409
Science and engineering	6,484	7,463	8,661	9,282	10,339	11,159	12,199	13,222	14,103
Sciences	6,008	6,936	8,115	8,676	9,691	10,403	11,365	12,293	13,157
Physical sciences[a]	211	215	220	238	318	363	384	385	440
Mathematics	164	221	203	197	243	221	231	241	304
Computer science	416	477	449	396	416	431	456	426	490
Agricultural sciences	74	89	89	87	143	158	223	264	314
Biological sciences	1,164	1,245	1,434	1,508	1,603	1,750	1,961	2,195	2,460
Psychology	1,718	1,989	2,421	2,659	2,994	3,377	3,710	3,997	4,127
Social sciences	2,261	2,700	3,299	3,591	3,974	4,103	4,400	4,785	5,022
Engineering	476	527	546	606	648	756	834	929	946
Non-S&E	18,697	20,783	22,320	24,738	26,484	27,657	29,481	31,166	32,306

See explantory information and SOURCE at end of table.

Appendix table 3-15

Bachelor's degrees awarded to women, by citizenship, race/ethnicity, and field: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
American Indians/Alaskan									
Natives, all fields	2,438	2,591	2,979	3,173	3,502	3,785	4,002	4,323	4,627
Science and engineering	581	653	776	918	999	1,049	1,160	1,298	1,320
Sciences	558	626	745	884	960	1,004	1,112	1,231	1,273
Physical sciences[a]	21	23	25	32	31	32	30	43	41
Mathematics	22	25	24	28	30	29	23	28	27
Computer science	30	31	31	28	19	37	39	28	34
Agricultural sciences	21	20	17	22	43	42	58	70	68
Biological sciences	58	92	88	108	134	157	173	183	208
Psychology	143	166	221	242	281	287	338	372	368
Social sciences	263	269	339	424	422	420	451	507	527
Engineering	23	27	31	34	39	45	48	67	47
Non-S&E	1,857	1,938	2,203	2,255	2,503	2,736	2,842	3,025	3,307
Unknown race/ethnicity, all fields	17,717	13,437	12,121	12,806	12,893	13,927	14,287	15,260	16,758
Science and engineering	4,571	3,777	3,442	3,637	3,776	4,171	4,323	4,812	5,295
Sciences	4,389	3,603	3,321	3,466	3,631	3,982	4,117	4,600	5,108
Physical sciences[a]	103	92	106	89	114	123	133	148	211
Mathematics	152	136	98	107	99	104	106	113	120
Computer science	408	231	169	142	149	161	143	236	281
Agricultural sciences	45	45	94	104	99	160	171	181	203
Biological sciences	417	452	408	389	502	618	653	769	920
Psychology	1,394	1,083	989	1,131	1,143	1,215	1,188	1,336	1,372
Social sciences	1,870	1,564	1,457	1,504	1,525	1,601	1,723	1,817	2,001
Engineering	182	174	121	171	145	189	206	212	187
Non-S&E	13,146	9,660	8,679	9,169	9,117	9,756	9,964	10,448	11,463
Temporary residents, all fields	9,645	11,430	11,441	13,319	14,484	15,896	16,356	17,151	17,435
Science and engineering	3,382	3,741	3,897	4,408	4,467	4,820	5,061	5,235	5,251
Sciences	2,892	3,271	3,426	3,944	3,919	4,254	4,441	4,559	4,623
Physical sciences[a]	180	197	190	239	246	250	249	240	246
Mathematics	200	204	234	207	198	235	172	206	164
Computer science	594	574	555	603	606	627	607	568	622
Agricultural sciences	60	67	70	118	89	88	112	92	124
Biological sciences	436	519	514	648	580	659	752	791	743
Psychology	365	513	489	610	648	710	741	794	874
Social sciences	1,057	1,197	1,374	1,519	1,552	1,685	1,808	1,868	1,850
Engineering	490	470	471	464	548	566	620	676	628
Non-S&E	6,263	7,689	7,544	8,911	10,017	11,076	11,295	11,916	12,184

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-16

Bachelor's degrees awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total, all fields	495,867	508,952	525,395	537,536	537,061	531,146	528,000	525,282	525,714
Science and engineering	199,916	201,499	209,270	214,388	216,492	216,078	216,614	214,329	213,171
Sciences	145,186	148,977	157,000	161,692	163,923	163,689	164,849	163,483	163,630
Physical sciences[a]	11,109	11,199	11,466	11,877	12,253	12,559	12,666	12,306	12,001
Mathematics	7,863	7,804	7,923	7,859	7,754	7,318	7,176	6,938	6,618
Computer science	19,321	17,896	17,670	17,565	17,466	17,628	17,666	18,166	19,796
Agricultural sciences	5,594	5,477	6,512	7,443	8,169	9,132	10,078	10,336	10,395
Biological sciences	18,631	19,715	21,107	23,111	25,314	26,956	29,189	29,839	29,982
Psychology	15,399	16,155	17,137	18,029	18,749	19,638	19,965	19,491	19,057
Social sciences	67,269	70,731	75,185	75,808	74,218	70,458	68,109	66,407	65,781
Engineering	54,730	52,522	52,270	52,696	52,569	52,389	51,765	50,846	49,541
Non-S&E	295,951	307,453	316,125	323,148	320,569	315,068	311,386	310,953	312,543
U.S. citizens and permanent residents, all fields	478,959	490,725	508,289	518,484	517,318	510,030	506,569	503,659	504,262
Science and engineering	190,980	192,516	200,929	204,994	207,030	206,144	206,828	204,767	203,694
Sciences	140,677	144,106	152,411	156,339	158,453	157,999	159,205	158,042	158,168
Physical sciences[a]	10,694	10,788	11,049	11,352	11,786	12,086	12,229	11,875	11,572
Mathematics	7,539	7,430	7,565	7,514	7,390	6,960	6,790	6,618	6,326
Computer science	17,849	16,433	16,251	15,964	15,799	15,960	16,093	16,735	18,289
Agricultural sciences	5,380	5,274	6,379	7,212	8,012	8,962	9,918	10,173	10,225
Biological sciences	18,200	19,171	20,628	22,542	24,739	26,334	28,576	29,170	29,303
Psychology	15,239	15,977	16,962	17,809	18,542	19,406	19,690	19,236	18,761
Social sciences	65,776	69,033	73,577	73,946	72,185	68,291	65,909	64,235	63,692
Engineering	50,303	48,410	48,518	48,655	48,577	48,145	47,623	46,725	45,526
Non-S&E	287,979	298,209	307,360	313,490	310,288	303,886	299,741	298,892	300,568
Whites, non-Hispanic, all fields	401,024	410,745	422,517	427,240	420,211	407,155	399,132	392,541	389,007
Science and engineering	157,675	158,687	164,220	166,063	165,245	161,731	159,889	156,121	153,382
Sciences	117,142	119,995	125,707	127,819	127,415	124,946	123,912	121,542	119,762
Physical sciences[a]	9,179	9,203	9,430	9,614	9,958	10,006	9,966	9,695	9,290
Mathematics	6,253	6,119	6,255	6,131	5,920	5,456	5,239	5,085	4,851
Computer science	13,974	12,916	12,571	12,329	12,022	11,793	11,924	12,070	12,991
Agricultural sciences	4,954	4,892	5,840	6,681	7,333	8,152	8,968	9,226	9,215
Biological sciences	14,488	15,174	16,030	17,293	18,882	19,790	21,065	21,388	20,908
Psychology	12,632	13,277	14,007	14,502	14,891	15,241	15,170	14,520	13,918
Social sciences	55,662	58,414	61,574	61,269	58,409	54,508	51,580	49,558	48,589
Engineering	40,533	38,692	38,513	38,244	37,830	36,785	35,977	34,579	33,620
Non-S&E	243,349	252,058	258,297	261,177	254,966	245,424	239,243	236,420	235,625

See explanatory information and SOURCE at end of table.

Appendix table 3-16

Bachelor's degrees awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Asians/Pacific Islanders, all fields	19,097	20,773	23,190	24,819	26,420	28,348	29,954	31,732	32,588
Science and engineering	11,528	11,942	13,198	14,132	14,967	16,039	17,015	17,914	18,495
Sciences	6,701	6,973	8,131	9,002	9,732	10,699	11,652	12,303	13,060
Physical sciences[a]	592	606	615	675	648	784	908	881	903
Mathematics	491	482	486	502	523	519	539	494	462
Computer science	1,335	1,268	1,373	1,492	1,476	1,583	1,697	1,930	2,276
Agricultural sciences	63	57	79	78	82	130	139	169	191
Biological sciences	1,573	1,736	2,230	2,633	2,992	3,467	3,878	4,007	4,181
Psychology	491	564	620	738	807	969	1,125	1,205	1,223
Social sciences	2,156	2,260	2,728	2,884	3,204	3,247	3,366	3,617	3,824
Engineering	4,827	4,969	5,067	5,130	5,235	5,340	5,363	5,611	5,435
Non-S&E	7,569	8,831	9,992	10,687	11,453	12,309	12,939	13,818	14,093
Blacks, non-Hispanic, all fields	22,590	24,238	26,518	28,374	30,106	30,998	32,223	32,726	33,653
Science and engineering	7,830	8,448	9,375	10,099	10,806	11,127	11,700	11,947	12,150
Sciences	6,414	6,964	7,761	8,335	9,022	9,281	9,736	9,928	10,173
Physical sciences[a]	292	391	361	370	464	495	482	466	521
Mathematics	342	380	374	444	457	476	468	510	488
Computer science	1,074	971	1,092	1,049	1,161	1,241	1,218	1,212	1,323
Agricultural sciences	110	100	113	126	137	121	187	186	189
Biological sciences	658	696	749	883	927	981	1,236	1,304	1,448
Psychology	794	879	982	1,099	1,232	1,402	1,418	1,591	1,544
Social sciences	3,144	3,547	4,070	4,364	4,644	4,565	4,727	4,659	4,660
Engineering	1,416	1,484	1,614	1,764	1,784	1,846	1,964	2,019	1,977
Non-S&E	14,760	15,790	17,143	18,275	19,300	19,871	20,523	20,779	21,503
Hispanics, all fields	18,683	20,781	22,026	23,825	25,860	27,875	29,335	30,550	31,716
Science and engineering	7,434	7,888	8,730	9,160	10,190	11,031	11,592	12,044	12,622
Sciences	5,399	5,849	6,543	6,805	7,695	8,136	8,695	8,848	9,443
Physical sciences[a]	311	318	326	361	415	437	488	468	474
Mathematics	249	259	279	273	300	315	354	340	338
Computer science	669	738	724	700	719	876	824	841	920
Agricultural sciences	144	124	125	130	193	228	283	297	318
Biological sciences	955	1,019	1,043	1,144	1,298	1,340	1,560	1,598	1,823
Psychology	687	757	826	928	996	1,166	1,326	1,285	1,382
Social sciences	2,384	2,634	3,220	3,269	3,774	3,774	3,860	4,019	4,188
Engineering	2,035	2,039	2,187	2,355	2,495	2,895	2,897	3,196	3,179
Non-S&E	11,249	12,893	13,296	14,665	15,670	16,844	17,743	18,506	19,094

See explanatory information and SOURCE at end of table.

Appendix table 3-16

Bachelor's degrees awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
American Indians/Alaskan Natives, all fields	1,774	1,895	2,151	2,401	2,562	2,669	2,811	2,915	3,079
Science and engineering	690	691	785	901	1,005	1,077	1,108	1,121	1,213
Sciences	567	560	634	759	826	901	913	926	1,007
Physical sciences[a]	52	46	38	61	52	66	74	57	65
Mathematics	23	18	22	27	29	29	30	28	39
Computer science	54	49	48	53	59	73	50	69	72
Agricultural sciences	38	33	43	42	66	82	81	78	85
Biological sciences	72	84	93	103	112	128	143	156	191
Psychology	68	69	90	93	113	120	132	124	147
Social sciences	260	261	300	380	395	403	403	414	408
Engineering	123	131	151	142	179	176	195	195	206
Non-S&E	1,084	1,204	1,366	1,500	1,557	1,592	1,703	1,794	1,866
Unknown race/ethnicity, all fields	15,791	12,293	11,887	11,825	12,159	12,985	13,114	13,195	14,219
Science and engineering	5,823	4,860	4,621	4,639	4,817	5,139	5,524	5,620	5,832
Sciences	4,454	3,765	3,635	3,619	3,763	4,036	4,297	4,495	4,723
Physical sciences[a]	268	224	259	271	249	298	311	308	319
Mathematics	181	172	149	137	161	165	160	161	148
Computer science	743	491	443	341	362	394	380	613	707
Agricultural sciences	71	68	179	155	201	249	260	217	227
Biological sciences	454	462	483	486	528	628	694	717	752
Psychology	567	431	437	449	503	508	519	511	547
Social sciences	2,170	1,917	1,685	1,780	1,759	1,794	1,973	1,968	2,023
Engineering	1,369	1,095	986	1,020	1,054	1,103	1,227	1,125	1,109
Non-S&E	9,968	7,433	7,266	7,186	7,342	7,846	7,590	7,575	8,387
Temporary residents, all fields	16,908	18,227	17,106	19,052	19,743	21,116	21,431	21,623	21,452
Science and engineering	8,936	8,983	8,341	9,394	9,462	9,934	9,786	9,562	9,477
Sciences	4,509	4,871	4,589	5,353	5,470	5,690	5,644	5,441	5,462
Physical sciences[a]	2,856	2,995	2,806	3,271	3,230	3,291	3,169	3,014	3,077
Mathematics	324	374	358	345	364	358	386	320	292
Computer science	1,472	1,483	1,419	1,601	1,667	1,668	1,573	1,431	1,507
Agricultural sciences	214	203	133	231	157	170	160	163	170
Biological sciences	431	544	479	569	575	622	613	669	679
Psychology	160	178	175	220	207	232	275	255	296
Social sciences	1,493	1,098	1,608	1,862	2,033	2,167	2,200	2,172	2,089
Engineering	4,427	4,112	3,752	4,041	3,992	4,244	4,142	4,121	4,015
Non-S&E	7,972	9,244	8,765	9,658	10,281	11,182	11,645	12,061	11,975

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences, as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 3-17

Bachelor's degrees awarded, by sex, citizenship, race/ethnicity, and S&E field: 1998

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Sex, citizenship, and race/ethnicity	Total, all fields	Total, S&E	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences	Engineering
Total	1,199,579	390,618	15,273	4,321	12,094	27,674	17,967	67,112	74,457	110,806	60,914
White, non-Hispanic	878,018	272,561	10,763	3,803	8,903	17,069	15,616	45,912	54,225	75,696	40,574
Asian/Pacific Islander	69,988	34,004	1,584	92	834	3,220	439	8,869	4,267	7,697	7,002
Black, non-Hispanic	95,878	30,751	1,057	70	966	2,666	409	4,553	6,852	11,159	3,019
Hispanic	78,125	25,712	796	118	604	1,473	631	4,283	5,509	8,173	4,125
American Indian/Alaskan Native	7,706	2,392	81	25	65	112	151	399	515	790	254
Other/unknown race/ethnicity	30,977	10,489	399	131	269	997	428	1,673	1,919	3,376	1,297
Temporary resident	38,887	14,709	593	82	453	2,137	293	1,423	1,170	3,915	4,643
Men	525,714	200,221	9,279	2,722	6,435	20,235	10,224	30,011	19,057	52,683	49,575
White, non-Hispanic	389,007	142,372	6,851	2,439	4,739	13,274	9,062	20,935	13,918	37,502	33,652
Asian/Pacific Islander	32,588	18,176	858	45	444	2,328	188	4,181	1,223	3,474	5,435
Black, non-Hispanic	33,653	11,698	488	33	462	1,372	179	1,448	1,544	4,195	1,977
Hispanic	31,716	11,968	412	62	318	961	318	1,823	1,382	3,513	3,179
American Indian/Alaskan Native	3,079	1,122	53	12	38	76	83	191	147	315	207
Other/unknown race/ethnicity	14,219	5,448	236	83	148	711	225	753	547	1,635	1,110
Temporary resident	21,452	9,437	381	48	286	1,513	169	680	296	2,049	4,015
Women	673,865	190,397	5,994	1,599	5,659	7,439	7,743	37,101	55,400	58,123	11,339
White, non-Hispanic	489,011	130,189	3,912	1,364	4,164	3,795	6,554	24,977	40,307	38,194	6,922
Asian/Pacific Islander	37,400	15,828	726	47	390	892	251	4,688	3,044	4,223	1,567
Black, non-Hispanic	62,225	19,053	569	37	504	1,294	230	3,105	5,308	6,964	1,042
Hispanic	46,409	13,744	384	56	286	512	313	2,460	4,127	4,660	946
American Indian/Alaskan Native	4,627	1,270	28	13	27	36	68	208	368	475	47
Other/unknown race/ethnicity	16,758	5,041	163	48	121	286	203	920	1,372	1,741	187
Temporary resident	17,435	5,272	212	34	167	624	124	743	874	1,866	628

See explanatory information and SOURCE at end of table.

Appendix table 3-17

Bachelor's degrees awarded, by sex, citizenship, race/ethnicity, and S&E field: 1998

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Sex, citizenship, and race/ethnicity	Total, all fields	Total, S&E	Physical sciences	Earth, atmo-spheric & ocean sciences	Mathe-matics	Computer science	Agricultural sciences	Biological sciences	Psy-chology	Social sciences	Engineering
	Percent female										
Total	56.2	48.7	39.2	37.0	46.8	26.9	43.1	55.3	74.4	52.5	18.6
White, non-Hispanic	55.7	47.8	36.3	35.9	46.8	22.2	42.0	54.4	74.3	50.5	17.1
Asian/Pacific Islander	53.4	46.5	45.8	51.1	46.8	27.7	57.2	52.9	71.3	54.9	22.4
Black, non-Hispanic	64.9	62.0	53.8	52.9	52.2	48.5	56.2	68.2	77.5	62.4	34.5
Hispanic	59.4	53.5	48.2	47.5	47.4	34.8	49.6	57.4	74.9	57.0	22.9
American Indian/Alaskan Native	60.0	53.1	34.6	52.0	41.5	32.1	45.0	52.1	71.5	60.1	18.5
Other/unknown race/ethnicity	54.1	48.1	40.9	36.6	45.0	28.7	47.4	55.0	71.5	51.6	14.4
Temporary resident	44.8	35.8	35.8	41.5	36.9	29.2	42.3	52.2	74.7	47.7	13.5

NOTE: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey.

Appendix table 3-18

Undergraduate borrowing of 1997 and 1998 S&E bachelor's degree recipients, by sex, race/ethnicity, and disability status

Sex, race/ethnicity, and disability status	Percent that borrowed	Median debt in 1999 (dollars)	Mean debt in 1999 (dollars)
Total	60.3	12,000	13,883
Male	59.8	11,200	13,491
Female	60.8	13,000	14,256
White, non-Hispanic	58.6	12,000	13,804
Asian/Pacific Islander	56.0	10,000	13,457
Black, non-Hispanic	76.0	14,000	15,728
Hispanic	66.4	11,000	12,951
American Indian/Alaskan Native	80.5	8,400	14,848
Without disabilities	60.0	12,000	13,879
With disabilities	68.0	10,000	13,973

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates.

Appendix table 4-1

Science and engineering graduate students, by field: 1990–99

Page 1 of 2

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Science and engineering, total	397,128	412,690	430,635	435,869	431,233	422,533	415,258	407,656	404,903	411,308
Physical sciences	34,075	34,710	35,348	35,318	34,449	33,388	32,324	31,078	30,571	30,689
Astronomy	810	829	869	880	973	912	874	778	820	832
Chemistry	19,118	19,407	19,929	20,131	19,797	19,565	19,327	18,764	18,479	18,414
Physics	13,813	14,081	14,122	13,841	13,162	12,425	11,728	11,147	10,809	10,869
Physical sciences, other	334	393	428	466	517	486	395	389	463	574
Earth, atmospheric, and ocean sciences	13,984	14,480	15,333	15,731	15,968	15,722	15,185	14,565	14,259	14,082
Atmospheric sciences	929	968	1,089	1,112	1,109	1,072	1,086	1,092	965	913
Geosciences	7,692	7,567	7,744	7,785	7,741	7,608	7,323	6,997	6,705	6,652
Ocean sciences	2,333	2,386	2,530	2,611	2,853	2,703	2,598	2,458	2,545	2,608
Earth, atmospheric, and ocean sciences, other	3,030	3,559	3,970	4,223	4,265	4,339	4,178	4,018	4,044	3,909
Mathematics and applied mathematics	17,096	17,206	17,404	16,945	16,463	15,400	14,970	14,048	13,841	13,530
Statistics	2,678	2,746	2,951	3,055	3,116	3,109	3,045	2,681	2,647	2,724
Computer science	34,257	34,681	36,325	36,213	34,158	33,458	34,626	35,991	38,027	42,560
Agricultural sciences	11,316	11,506	11,841	11,988	12,273	12,450	12,009	11,893	11,877	12,036
Biological sciences	49,989	51,778	54,180	56,458	58,152	58,775	58,170	57,140	57,124	57,320
Anatomy	968	1,008	991	986	1,043	1,008	1,046	1,029	947	913
Biochemistry	5,039	5,201	5,376	5,513	5,632	5,579	5,296	5,123	5,173	5,120
Biology	13,027	13,292	13,874	14,327	14,220	14,284	14,635	14,643	14,289	13,996
Biometry and epidemiology	1,871	2,032	2,365	2,658	2,710	2,812	3,001	2,900	3,484	3,575
Biophysics	642	697	751	780	794	845	833	748	737	710
Botany	2,733	2,694	2,689	2,714	2,748	2,609	2,504	2,402	2,328	2,261
Cell and molecular biology	2,587	2,852	3,132	3,415	3,804	3,938	3,961	4,046	4,148	4,402
Ecology	1,136	1,180	1,301	1,410	1,566	1,680	1,615	1,619	1,655	1,687
Entomology and parasitology	1,173	1,171	1,193	1,247	1,263	1,241	1,234	1,161	1,158	1,145
Genetics	1,408	1,520	1,639	1,785	1,699	1,700	1,729	1,760	1,705	1,767
Microbiology, immunology, and virology	4,873	4,928	4,972	5,068	5,141	5,072	4,963	4,854	4,869	4,910
Nutrition	4,172	4,164	4,159	4,388	4,747	5,016	4,859	4,550	4,430	4,449
Pathology	1,354	1,449	1,456	1,575	1,707	1,670	1,656	1,674	1,580	1,580
Pharmacology	2,353	2,432	2,532	2,651	2,839	2,710	2,663	2,597	2,730	2,757
Physiology	2,236	2,332	2,317	2,372	2,378	2,540	2,377	2,298	2,151	2,100
Zoology	2,104	2,191	2,139	2,120	2,092	2,068	1,911	1,730	1,676	1,614
Biological sciences, other	2,313	2,635	3,294	3,449	3,769	4,003	3,887	4,006	4,054	4,334
Psychology	48,167	51,343	53,484	54,557	54,554	53,641	53,122	53,126	52,557	51,874
Psychology, combined program	20,108	19,555	18,802	18,887	18,297	17,666	16,894	17,350	17,241	16,353
Psychology, except clinical	18,143	20,954	22,592	23,144	23,573	23,456	23,441	22,768	22,668	22,805
Clinical psychology	9,916	10,834	12,090	12,526	12,684	12,519	12,787	13,008	12,648	12,716
Social sciences	77,941	80,735	85,766	88,770	89,107	89,417	88,618	86,064	84,031	85,025
Agricultural economics	2,273	2,364	2,522	2,415	2,289	2,338	2,117	2,043	1,995	2,014
Anthropology (cultural and social)	6,479	6,731	7,123	7,361	7,665	7,693	7,773	7,560	7,577	7,633
Economics	12,326	12,707	13,252	13,214	12,913	12,673	12,080	11,097	10,701	10,562
Geography	3,530	3,760	4,102	4,378	4,502	4,371	4,331	4,287	4,326	4,250
History and philosophy of science	331	337	360	369	387	401	409	443	508	557
Linguistics	3,404	3,425	3,277	3,321	3,279	3,194	3,156	3,068	2,935	2,799
Political science/public administration	30,582	31,707	33,797	35,076	34,317	34,298	33,252	32,083	30,828	31,398
Sociology	7,801	8,393	9,011	9,425	9,498	9,564	9,425	9,413	9,058	8,966
Sociology/anthropology	1,164	899	979	935	987	941	923	948	857	741
Social sciences, other	10,051	10,412	11,343	12,276	13,270	13,944	15,152	15,122	15,246	16,105

See SOURCE at end of table

Appendix table 4-1

Science and engineering graduate students, by field: 1990–99

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Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Engineering	107,625	113,505	118,003	116,834	112,993	107,173	103,189	101,070	99,969	101,468
Aerospace engineering	3,934	4,120	4,036	3,940	3,715	3,343	3,208	3,083	3,137	3,349
Agricultural engineering	946	983	1,008	1,018	1,061	1,037	1,012	941	925	934
Biomedical engineering	2,136	2,239	2,537	2,675	2,750	2,732	2,732	2,847	2,905	3,121
Chemical engineering	6,735	7,127	7,397	7,516	7,608	7,424	7,373	7,247	7,060	6,849
Civil engineering	15,542	17,398	19,572	19,583	19,925	19,218	18,528	17,156	16,481	16,190
Electrical engineering	33,722	35,111	36,428	35,290	33,020	30,721	29,702	30,548	31,129	31,368
Engineering science and engineering physics	2,020	2,154	2,218	2,180	2,089	1,955	1,751	1,647	1,701	1,627
Industrial/manufacturing engineering	11,248	12,676	13,525	13,596	13,661	13,143	12,399	11,736	10,995	10,886
Mechanical engineering	16,879	17,730	18,637	18,477	17,761	16,363	15,509	15,045	14,696	14,956
Metallurgical and materials engineering	4,941	5,160	5,512	5,363	5,191	4,920	4,713	4,649	4,644	4,451
Mining engineering	437	489	437	427	424	373	371	348	304	328
Nuclear engineering	1,278	1,282	1,286	1,306	1,246	1,154	980	868	821	830
Petroleum engineering	670	705	737	725	624	610	562	561	571	642
Engineering, other	7,137	6,331	4,673	4,738	3,918	4,180	4,349	4,394	4,600	5,937

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-2

Female science and engineering graduate students, by field: 1990–99

Page 1 of 2

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Science and engineering, total	133,737	140,847	150,239	156,584	159,117	160,201	161,661	162,027	163,445	168,468
Physical sciences	8,068	8,564	8,844	9,202	9,159	9,080	9,042	8,841	8,751	8,905
Astronomy	165	172	186	198	223	223	227	208	230	225
Chemistry	5,868	6,262	6,562	6,852	6,841	6,825	6,837	6,718	6,563	6,610
Physics	1,913	1,980	1,943	1,976	1,908	1,835	1,809	1,744	1,780	1,873
Physical sciences, other	122	150	153	176	187	197	169	171	178	197
Earth, atmospheric, and ocean sciences	4,119	4,455	4,851	5,030	5,323	5,436	5,448	5,419	5,569	5,720
Atmospheric sciences	185	190	241	225	242	237	234	263	234	242
Geosciences	1,922	2,008	2,077	2,110	2,235	2,298	2,332	2,311	2,326	2,407
Ocean sciences	781	846	959	1,004	1,107	1,094	1,059	1,043	1,152	1,210
Earth, atmospheric, and ocean sciences, other	1,231	1,411	1,574	1,691	1,739	1,807	1,823	1,802	1,857	1,861
Mathematics and applied mathematics	5,287	5,336	5,485	5,528	5,406	5,078	4,996	4,791	4,900	4,865
Statistics	912	962	1,064	1,110	1,129	1,183	1,225	1,081	1,089	1,176
Computer science	8,199	8,290	8,471	8,431	8,087	8,133	8,797	9,881	10,802	12,570
Agricultural sciences	3,335	3,567	3,775	4,118	4,318	4,465	4,458	4,572	4,725	4,915
Biological sciences	23,042	24,135	25,475	27,056	28,161	28,862	28,783	28,630	29,096	29,760
Anatomy	444	484	478	474	511	483	486	476	427	431
Biochemistry	2,065	2,131	2,218	2,331	2,382	2,417	2,293	2,181	2,235	2,274
Biology	5,949	6,212	6,579	6,807	6,744	6,889	7,124	7,273	7,204	7,146
Biometry and epidemiology	997	1,112	1,328	1,526	1,586	1,673	1,774	1,781	2,141	2,267
Biophysics	164	182	202	226	218	241	244	216	209	213
Botany	1,072	1,067	1,054	1,094	1,164	1,144	1,110	1,119	1,118	1,093
Cell and molecular biology	1,134	1,298	1,421	1,591	1,744	1,817	1,864	1,928	2,026	2,242
Ecology	469	518	589	664	745	774	768	781	823	870
Entomology and parasitology	358	341	354	400	417	414	424	410	414	406
Genetics	727	759	842	932	912	882	901	959	970	1,007
Microbiology, immunology, and virology	2,320	2,352	2,366	2,468	2,509	2,481	2,457	2,423	2,422	2,503
Nutrition	2,941	2,920	2,951	3,144	3,480	3,729	3,628	3,412	3,361	3,380
Pathology	578	624	647	741	782	780	809	832	804	804
Pharmacology	1,024	1,130	1,181	1,244	1,352	1,311	1,291	1,229	1,325	1,343
Physiology	933	966	951	983	986	1,058	981	934	886	910
Zoology	835	884	828	860	876	866	820	756	735	707
Biological sciences, other	1,032	1,155	1,486	1,571	1,753	1,903	1,809	1,920	1,996	2,164
Psychology	32,345	34,787	36,834	37,990	38,138	37,764	37,747	37,619	37,462	37,377
Psychology, combined program	13,067	12,714	12,470	12,693	12,332	12,015	11,668	11,951	11,938	11,457
Psychology, except clinical	12,583	14,632	15,808	16,425	16,808	16,817	16,992	16,417	16,415	16,698
Clinical psychology	6,695	7,441	8,556	8,872	8,998	8,932	9,087	9,251	9,109	9,222
Social sciences	33,758	35,056	38,223	40,436	41,349	42,193	42,920	42,459	42,044	43,337
Agricultural economics	599	636	712	750	748	783	710	688	680	713
Anthropology (cultural and social)	3,791	3,953	4,247	4,392	4,593	4,553	4,686	4,501	4,556	4,644
Economics	3,374	3,559	3,802	3,856	3,793	3,876	3,783	3,512	3,464	3,499
Geography	1,204	1,318	1,431	1,582	1,598	1,585	1,561	1,625	1,663	1,703
History and philosophy of science	118	132	130	142	140	139	152	162	193	212
Linguistics	2,006	1,913	1,996	2,020	2,066	2,000	2,023	2,017	1,953	1,833
Political science/public administration	13,157	13,736	14,971	15,756	15,584	15,950	15,632	15,404	14,961	15,582
Sociology	4,279	4,612	5,150	5,568	5,740	5,783	5,785	5,822	5,696	5,739
Sociology/anthropology	681	489	534	512	591	554	541	571	522	470
Social sciences, other	4,549	4,708	5,250	5,858	6,496	6,970	8,047	8,157	8,356	8,942

See SOURCE at end of table.

Appendix table 4-2

Female science and engineering graduate students, by field: 1990–99

Page 2 of 2

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Engineering	14,672	15,695	17,217	17,683	18,047	18,007	18,245	18,734	19,007	19,843
Aerospace engineering	289	327	348	357	358	351	352	371	382	423
Agricultural engineering	101	125	144	151	200	202	210	218	243	251
Biomedical engineering	547	588	617	698	697	726	733	826	870	1,004
Chemical engineering	1,146	1,257	1,394	1,499	1,526	1,561	1,642	1,709	1,721	1,726
Civil engineering	2,689	3,102	3,654	3,858	4,211	4,232	4,300	4,189	4,127	4,180
Electrical engineering	3,715	3,851	4,277	4,313	4,102	4,088	4,122	4,438	4,747	4,966
Engineering science and engineering physics	299	288	305	304	306	297	295	278	331	319
Industrial/manufacturing engineering	2,137	2,355	2,655	2,593	2,795	2,755	2,714	2,617	2,407	2,423
Mechanical engineering	1,442	1,511	1,698	1,774	1,823	1,677	1,636	1,779	1,762	1,787
Metallurgical and materials engineering	893	987	1,069	1,027	1,069	1,059	1,060	1,094	1,115	1,072
Mining engineering	58	50	43	50	50	42	54	63	55	55
Nuclear engineering	155	177	186	185	153	145	153	143	134	144
Petroleum engineering	33	52	65	66	59	71	60	77	55	82
Engineering, other	1,168	1,025	762	808	698	801	914	938	1,058	1,411

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-3

Male science and engineering graduate students, by field: 1990–99

Page 1 of 2

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Science and engineering, total	263,391	271,843	280,396	279,285	272,116	262,332	253,597	245,629	241,458	242,840
Physical sciences	26,007	26,146	26,504	26,116	25,290	24,308	23,282	22,237	21,820	21,784
Astronomy	645	657	683	682	750	689	647	570	590	607
Chemistry	13,250	13,145	13,367	13,279	12,956	12,740	12,490	12,046	11,916	11,804
Physics	11,900	12,101	12,179	11,865	11,254	10,590	9,919	9,403	9,029	8,996
Physical sciences, other	212	243	275	290	330	289	226	218	285	377
Earth, atmospheric, and ocean sciences	9,865	10,025	10,482	10,701	10,645	10,286	9,737	9,146	8,690	8,362
Atmospheric sciences	744	778	848	887	867	835	852	829	731	671
Geosciences	5,770	5,559	5,667	5,675	5,506	5,310	4,991	4,686	4,379	4,245
Ocean sciences	1,552	1,540	1,571	1,607	1,746	1,609	1,539	1,415	1,393	1,398
Earth, atmospheric, and ocean sciences, other	1,799	2,148	2,396	2,532	2,526	2,532	2,355	2,216	2,187	2,048
Mathematics and applied mathematics	11,809	11,870	11,919	11,417	11,057	10,322	9,974	9,257	8,941	8,665
Statistics	1,766	1,784	1,887	1,945	1,987	1,926	1,820	1,600	1,558	1,548
Computer science	26,058	26,391	27,854	27,782	26,071	25,325	25,829	26,110	27,225	29,990
Agricultural sciences	7,981	7,939	8,066	7,870	7,955	7,985	7,551	7,321	7,152	7,121
Biological sciences	26,947	27,643	28,705	29,402	29,991	29,913	29,387	28,510	28,028	27,560
Anatomy	524	524	513	512	532	525	560	553	520	482
Biochemistry	2,974	3,070	3,158	3,182	3,250	3,162	3,003	2,942	2,938	2,846
Biology	7,078	7,080	7,295	7,520	7,476	7,395	7,511	7,370	7,085	6,850
Biometry and epidemiology	874	920	1,037	1,132	1,124	1,139	1,227	1,119	1,343	1,308
Biophysics	478	515	549	554	576	604	589	532	528	497
Botany	1,661	1,627	1,635	1,620	1,584	1,465	1,394	1,283	1,210	1,168
Cell and molecular biology	1,453	1,554	1,711	1,824	2,060	2,121	2,097	2,118	2,122	2,160
Ecology	667	662	712	746	821	906	847	838	832	817
Entomology and parasitology	815	830	839	847	846	827	810	751	754	739
Genetics	681	761	797	853	787	818	828	801	735	760
Microbiology, immunology, and virology	2,553	2,576	2,606	2,600	2,632	2,591	2,506	2,431	2,447	2,407
Nutrition	1,231	1,244	1,208	1,244	1,267	1,287	1,231	1,138	1,069	1,069
Pathology	776	825	809	834	925	890	847	842	776	776
Pharmacology	1,329	1,302	1,351	1,407	1,487	1,399	1,372	1,368	1,405	1,414
Physiology	1,303	1,366	1,366	1,389	1,392	1,482	1,396	1,364	1,265	1,190
Zoology	1,269	1,307	1,311	1,260	1,216	1,202	1,091	974	941	907
Biological sciences, other	1,281	1,480	1,808	1,878	2,016	2,100	2,078	2,086	2,058	2,170
Psychology	15,822	16,556	16,650	16,567	16,416	15,877	15,375	15,507	15,095	14,497
Psychology, combined program	7,041	6,841	6,332	6,194	5,965	5,651	5,226	5,399	5,303	4,896
Psychology, except clinical	5,560	6,322	6,784	6,719	6,765	6,639	6,449	6,351	6,253	6,107
Clinical psychology	3,221	3,393	3,534	3,654	3,686	3,587	3,700	3,757	3,539	3,494
Social sciences	44,183	45,679	47,543	48,334	47,758	47,224	45,698	43,605	41,987	41,688
Agricultural economics	1,674	1,728	1,810	1,665	1,541	1,555	1,407	1,355	1,315	1,301
Anthropology (cultural and social)	2,688	2,778	2,876	2,969	3,072	3,140	3,087	3,059	3,021	2,989
Economics	8,952	9,148	9,450	9,358	9,120	8,797	8,297	7,585	7,237	7,063
Geography	2,326	2,442	2,671	2,796	2,904	2,786	2,770	2,662	2,663	2,547
History and philosophy of science	213	205	230	227	247	262	257	281	315	345
Linguistics	1,398	1,512	1,281	1,301	1,213	1,194	1,133	1,051	982	966
Political science/public administration	17,425	17,971	18,826	19,320	18,733	18,348	17,620	16,679	15,867	15,816
Sociology	3,522	3,781	3,861	3,857	3,758	3,781	3,640	3,591	3,362	3,227
Sociology/anthropology	483	410	445	423	396	387	382	377	335	271
Social sciences, other	5,502	5,704	6,093	6,418	6,774	6,974	7,105	6,965	6,890	7,163

See SOURCE at end of table.

Appendix table 4-3

Male science and engineering graduate students, by field: 1990–99

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Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Engineering	92,953	97,810	100,786	99,151	94,946	89,166	84,944	82,336	80,962	81,625
Aerospace engineering	3,645	3,793	3,688	3,583	3,357	2,992	2,856	2,712	2,755	2,926
Agricultural engineering	845	858	864	867	861	835	802	723	682	683
Biomedical engineering	1,589	1,651	1,920	1,977	2,053	2,006	1,999	2,021	2,035	2,117
Chemical engineering	5,589	5,870	6,003	6,017	6,082	5,863	5,731	5,538	5,339	5,123
Civil engineering	12,853	14,296	15,918	15,725	15,714	14,986	14,228	12,967	12,354	12,010
Electrical engineering	30,007	31,260	32,151	30,977	28,918	26,633	25,580	26,110	26,382	26,402
Engineering science and engineering physics	1,721	1,866	1,913	1,876	1,783	1,658	1,456	1,369	1,370	1,308
Industrial/manufacturing engineering	9,111	10,321	10,870	11,003	10,866	10,388	9,685	9,125	8,588	8,463
Mechanical engineering	15,437	16,219	16,939	16,703	15,938	14,686	13,873	13,266	12,934	13,169
Metallurgical and materials engineering	4,048	4,173	4,443	4,336	4,122	3,861	3,653	3,555	3,529	3,379
Mining engineering	379	439	394	377	374	331	317	285	249	273
Nuclear engineering	1,123	1,105	1,100	1,121	1,093	1,009	827	725	687	686
Petroleum engineering	637	653	672	659	565	539	502	484	516	560
Engineering, other	5,969	5,306	3,911	3,930	3,220	3,379	3,435	3,456	3,542	4,526

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-4

Full-time first-time S&E graduate students, by field and sex: 1990–99

Field and sex	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Both sexes, all S&E fields	76,570	81,455	83,133	79,307	78,050	74,378	73,462	73,576	74,362	75,247
Physical sciences	6,809	7,107	6,910	6,690	6,454	6,127	6,014	6,029	5,932	5,978
Earth, atmospheric, and ocean sciences	2,694	2,909	3,016	2,985	3,009	2,803	2,632	2,689	2,859	2,739
Mathematical sciences	4,269	4,350	4,443	4,044	3,963	3,578	3,450	3,302	3,334	3,265
Computer science	5,378	5,570	5,479	4,742	4,756	4,783	4,917	5,018	5,758	6,677
Agricultural sciences	2,413	2,434	2,221	2,303	2,304	2,242	2,130	2,107	2,256	2,200
Biological sciences	10,220	10,676	10,893	11,117	11,379	11,423	10,839	11,115	11,405	11,028
Psychology	8,925	9,457	10,172	9,686	9,530	9,241	9,140	8,800	8,590	8,319
Social sciences	15,779	16,420	17,757	17,403	16,888	16,108	16,342	15,704	15,005	14,608
Engineering	20,083	22,532	22,242	20,337	19,767	18,073	17,998	18,812	19,223	20,433
Males, all S&E fields	49,502	52,668	52,698	49,133	48,241	45,149	43,732	43,583	43,855	44,216
Physical sciences	5,006	5,194	5,003	4,802	4,599	4,353	4,183	4,145	4,208	4,071
Earth, atmospheric, and ocean sciences	1,862	1,917	1,971	1,945	1,899	1,712	1,602	1,612	1,595	1,463
Mathematical sciences	2,839	2,841	2,950	2,662	2,590	2,337	2,207	2,077	2,096	2,014
Computer science	4,199	4,308	4,291	3,667	3,681	3,630	3,694	3,730	4,241	4,880
Agricultural sciences	1,594	1,565	1,422	1,355	1,414	1,345	1,283	1,201	1,237	1,217
Biological sciences	5,212	5,475	5,492	5,524	5,726	5,737	5,330	5,346	5,331	5,055
Psychology	2,831	2,930	3,199	2,914	2,994	2,851	2,732	2,570	2,418	2,277
Social sciences	8,875	9,282	9,707	9,436	9,068	8,499	8,263	7,879	7,371	7,046
Engineering	17,084	19,156	18,663	16,828	16,270	14,685	14,438	15,023	15,358	16,193
Females, all S&E fields	27,068	28,787	30,435	30,174	29,809	29,229	29,730	29,993	30,507	31,031
Physical sciences	1,803	1,913	1,907	1,888	1,855	1,774	1,831	1,884	1,724	1,907
Earth, atmospheric, and ocean sciences	832	992	1,045	1,040	1,110	1,091	1,030	1,077	1,264	1,276
Mathematical sciences	1,430	1,509	1,493	1,382	1,373	1,241	1,243	1,225	1,238	1,251
Computer science	1,179	1,262	1,188	1,075	1,075	1,153	1,223	1,288	1,517	1,797
Agricultural sciences	819	869	799	948	890	897	847	906	1,019	983
Biological sciences	5,008	5,201	5,401	5,593	5,653	5,686	5,509	5,769	6,074	5,973
Psychology	6,094	6,527	6,973	6,772	6,536	6,390	6,408	6,230	6,172	6,042
Social sciences	6,904	7,138	8,050	7,967	7,820	7,609	8,079	7,825	7,634	7,562
Engineering	2,999	3,376	3,579	3,509	3,497	3,388	3,560	3,789	3,865	4,240

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-5

Top institutions enrolling science and engineering graduate students, by sex: 1999

Rank	Academic institution	Male			Academic institution	Female		
		S&E, total	Science, total	Engineering, total		S&E, total	Science, total	Engineering, total
	Total, all institutions	242,840	161,215	81,625	Total, all institutions	168,468	148,625	19,843
1	Stanford University	3,448	1,364	2,084	University of Minnesota	1,922	1,664	258
2	University of Michigan	3,362	1,311	2,051	University of Colorado	1,679	1,483	196
3	Massachusetts Institute of Technology	3,140	1,260	1,880	University of California–Berkeley	1,583	1,225	358
4	University of Southern California	3,089	1,556	1,533	Teachers College, Columbia University	1,566	1,566	0
5	Texas A&M University	3,035	1,702	1,333	University of Washington	1,557	1,291	266
6	University of Illinois at Urbana-Champaign	3,023	1,814	1,209	University of Wisconsin–Madison	1,545	1,377	168
7	University of California–Berkeley	2,878	1,756	1,122	George Washington University	1,540	1,225	315
8	University of Wisconsin–Madison	2,811	1,917	894	University of Michigan	1,532	1,070	462
9	Georgia Institute of Technology	2,786	589	2,197	New York University	1,498	1,498	0
10	University of Minnesota	2,687	1,747	940	Rutgers University	1,458	1,273	185
11	University of Texas–Austin	2,663	1,258	1,405	Texas A&M University	1,440	1,193	247
12	Pennsylvania State University	2,596	1,422	1,174	University of Southern California	1,403	1,118	285
13	University of Florida	2,559	1,369	1,190	University of California–Los Angeles	1,400	1,272	128
14	Purdue University	2,531	1,214	1,317	Cornell University	1,369	1,194	175
15	University of Colorado	2,526	1,739	787	University of Illinois at Urbana-Champaign	1,336	1,116	220
16	University of Maryland–College Park	2,500	1,309	1,191	University of Maryland–College Park	1,323	1,020	303
17	Ohio State University	2,427	1,582	845	Ohio State University	1,297	1,072	225
18	University of California–Los Angeles	2,331	1,670	661	Harvard University	1,293	1,242	51
19	University of Washington	2,318	1,550	768	University of Kansas	1,284	1,201	83
20	North Carolina State University	2,267	1,190	1,077	Stanford University	1,263	730	533

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

Appendix table 4-6

Science and engineering graduate students, by field, citizenship, and race/ethnicity: 1990–99

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Field, citizenship, and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Science and engineering, all students	397,128	412,690	430,635	435,869	431,233	422,533	415,258	407,656	404,903	411,308
U.S. citizens and permanent residents	294,311	304,056	321,171	330,148	329,073	323,993	317,101	308,665	302,875	301,404
White, non-Hispanic	238,465	243,596	253,425	256,840	255,701	245,893	238,062	228,018	220,689	216,865
Asian/Pacific Islander	17,155	18,135	21,751	24,059	26,475	25,904	25,928	26,007	26,709	27,562
Black, non-Hispanic	12,774	13,691	15,445	17,116	17,610	18,282	19,068	19,346	19,654	20,341
Hispanic	10,159	11,045	12,246	13,381	13,277	14,111	14,568	14,980	15,476	16,514
American Indian/Alaskan Native	1,054	1,120	1,243	1,309	1,382	1,516	1,538	1,600	1,607	1,557
Other or unknown race/ethnicity	14,704	16,469	17,061	17,443	14,628	18,287	17,937	18,714	18,740	18,565
Temporary residents	102,817	108,634	109,464	105,721	102,160	98,540	98,157	98,991	102,028	109,904
Physical sciences, all students	34,075	34,710	35,348	35,318	34,449	33,388	32,324	31,078	30,571	30,689
U.S. citizens and permanent residents	21,609	21,985	22,543	23,066	22,740	21,979	21,146	20,183	19,833	19,567
White, non-Hispanic	18,433	18,402	18,527	18,582	18,422	17,475	16,750	15,741	15,214	15,048
Asian/Pacific Islander	1,200	1,429	1,615	1,973	1,923	1,780	1,743	1,637	1,760	1,683
Black, non-Hispanic	654	699	807	843	856	897	986	952	913	903
Hispanic	642	649	680	747	675	731	742	782	832	891
American Indian/Alaskan Native	63	62	67	81	67	76	60	70	64	69
Other or unknown race/ethnicity	617	744	847	840	797	1,020	865	1,001	1,050	973
Temporary residents	12,466	12,725	12,805	12,252	11,709	11,409	11,178	10,895	10,738	11,122
Earth, atmospheric, and ocean sciences, all students	13,984	14,480	15,333	15,731	15,968	15,722	15,185	14,565	14,259	14,082
U.S. citizens and permanent residents	11,309	11,583	12,329	12,723	12,704	12,775	12,419	12,050	11,760	11,560
White, non-Hispanic	10,375	10,531	10,881	11,085	11,291	11,251	10,875	10,419	10,099	10,022
Asian/Pacific Islander	258	267	383	462	449	419	409	417	424	400
Black, non-Hispanic	123	141	201	224	202	215	219	203	202	213
Hispanic	241	250	308	370	339	365	374	399	370	382
American Indian/Alaskan Native	30	29	34	45	48	52	65	82	84	63
Other or unknown race/ethnicity	282	365	522	537	375	473	477	530	581	480
Temporary residents	2,675	2,897	3,004	3,008	3,264	2,947	2,766	2,515	2,499	2,522
Mathematical sciences, all students	19,774	19,952	20,355	20,000	19,579	18,509	18,015	16,729	16,488	16,254
U.S. citizens and permanent residents	13,210	13,318	13,678	13,866	13,516	12,700	12,254	11,185	11,067	10,332
White, non-Hispanic	10,605	10,457	10,851	10,572	10,496	9,659	9,201	8,360	8,100	7,662
Asian/Pacific Islander	822	866	963	1,020	1,208	1,121	1,225	1,052	1,174	1,002
Black, non-Hispanic	511	524	579	710	673	689	711	657	613	594
Hispanic	351	349	376	415	369	400	425	427	454	446
American Indian/Alaskan Native	20	20	27	32	36	70	41	43	34	30
Other or unknown race/ethnicity	901	1,102	1,082	1,117	734	761	651	646	692	598
Temporary residents	6,564	6,634	6,477	6,134	6,063	5,809	5,761	5,544	5,421	5,922
Computer science, all students	34,257	34,681	36,325	36,213	34,158	33,458	34,626	35,991	38,027	42,560
U.S. citizens and permanent residents	23,351	23,057	24,209	24,304	23,096	22,663	22,779	23,074	23,605	25,405
White, non-Hispanic	17,292	16,527	16,951	16,804	15,752	14,773	14,479	14,062	13,948	14,423
Asian/Pacific Islander	2,888	2,863	3,389	3,557	4,046	4,043	4,266	4,626	5,219	6,156
Black, non-Hispanic	985	1,093	1,106	1,167	1,182	1,155	1,276	1,300	1,355	1,501
Hispanic	565	631	706	695	631	664	700	723	754	872
American Indian/Alaskan Native	44	43	72	70	44	56	54	60	92	75
Other or unknown race/ethnicity	1,577	1,900	1,985	2,011	1,441	1,972	2,004	2,303	2,237	2,378
Temporary residents	10,906	11,624	12,116	11,909	11,062	10,795	11,847	12,917	14,422	17,155

See SOURCE at end of table.

Appendix table 4-6

Science and engineering graduate students, by field, citizenship, and race/ethnicity: 1990–99

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Field, citizenship, and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Agricultural sciences, all students	11,316	11,506	11,841	11,988	12,273	12,450	12,009	11,893	11,877	12,036
U.S. citizens and permanent residents	8,133	8,298	8,663	8,850	9,132	9,353	9,060	9,167	9,280	9,545
White, non-Hispanic	7,251	7,481	7,691	7,791	8,032	8,049	7,813	7,816	7,911	8,196
Asian/Pacific Islander	242	225	215	271	281	280	283	302	305	306
Black, non-Hispanic	158	145	210	238	240	298	272	232	313	277
Hispanic	272	279	279	309	268	289	374	408	387	428
American Indian/Alaskan Native	20	31	40	35	38	60	49	62	70	68
Other or unknown race/ethnicity	190	137	228	206	273	377	269	347	294	270
Temporary residents	3,183	3,208	3,178	3,138	3,141	3,097	2,949	2,726	2,597	2,491
Biological sciences, all students	49,989	51,778	54,180	56,458	58,152	58,775	58,170	57,140	57,124	57,320
U.S. citizens and permanent residents	38,470	39,282	41,359	43,527	45,319	46,548	46,658	45,952	45,652	46,013
White, non-Hispanic	32,677	33,058	34,230	35,096	36,392	36,525	36,345	35,022	34,584	34,529
Asian/Pacific Islander	2,228	2,346	2,822	3,456	3,954	4,302	4,465	4,481	4,439	4,461
Black, non-Hispanic	1,249	1,317	1,493	1,737	1,709	1,879	2,010	2,167	2,175	2,258
Hispanic	1,220	1,374	1,459	1,649	1,651	1,824	1,848	1,986	2,047	2,181
American Indian/Alaskan Native	142	129	141	157	183	205	200	198	192	187
Other or unknown race/ethnicity	954	1,058	1,214	1,432	1,430	1,813	1,790	2,098	2,215	2,397
Temporary residents	11,519	12,496	12,821	12,931	12,833	12,227	11,512	11,188	11,472	11,307
Psychology, all students	48,167	51,343	53,484	54,557	54,554	53,641	53,122	53,126	52,557	51,874
U.S. citizens and permanent residents	46,349	49,355	51,551	52,676	52,211	51,554	51,149	51,118	50,371	49,634
White, non-Hispanic	39,246	40,990	42,426	42,662	42,062	40,146	39,327	38,724	37,622	36,356
Asian/Pacific Islander	962	1,040	1,278	1,470	1,583	1,598	1,757	1,909	2,019	2,044
Black, non-Hispanic	2,226	2,455	2,758	3,284	3,529	3,359	3,452	3,644	3,813	3,787
Hispanic	2,160	2,365	2,371	2,562	2,485	2,799	2,937	3,075	3,228	3,575
American Indian/Alaskan Native	235	252	290	289	317	330	359	341	311	303
Other or unknown race/ethnicity	1,520	2,253	2,428	2,409	2,235	3,322	3,317	3,425	3,378	3,569
Temporary residents	1,818	1,988	1,933	1,881	2,343	2,087	1,973	2,008	2,186	2,240
Social sciences, all students	77,941	80,735	85,766	88,770	89,107	89,417	88,618	86,064	84,031	85,025
U.S. citizens and permanent residents	62,454	65,014	70,090	73,580	74,348	74,714	73,484	71,340	69,100	69,297
White, non-Hispanic	49,379	51,429	54,530	56,852	57,277	56,093	54,196	51,819	49,151	48,615
Asian/Pacific Islander	1,868	1,988	2,584	2,854	3,244	3,343	3,340	3,450	3,364	3,356
Black, non-Hispanic	5,082	5,292	5,915	6,353	6,435	6,934	7,245	7,313	7,448	7,842
Hispanic	2,822	3,024	3,604	3,939	3,996	4,231	4,232	4,368	4,504	4,820
American Indian/Alaskan Native	348	370	395	391	408	437	477	505	524	520
Other or unknown race/ethnicity	2,955	2,911	3,062	3,191	2,988	3,676	3,994	3,885	4,109	4,144
Temporary residents	15,487	15,721	15,676	15,190	14,759	14,703	15,134	14,724	14,931	15,728
Engineering, all students	107,625	113,505	118,003	116,834	112,993	107,173	103,189	101,070	99,969	101,468
U.S. citizens and permanent residents	69,426	72,164	76,549	77,556	76,007	71,707	68,152	64,596	62,207	60,051
White, non-Hispanic	53,207	54,721	57,338	57,396	55,977	51,922	49,076	46,055	44,060	42,014
Asian/Pacific Islander	6,687	7,111	8,502	8,996	9,787	9,018	8,440	8,133	8,005	8,154
Black, non-Hispanic	1,786	2,025	2,376	2,560	2,784	2,856	2,897	2,878	2,822	2,966
Hispanic	1,886	2,124	2,463	2,695	2,863	2,808	2,936	2,812	2,900	2,919
American Indian/Alaskan Native	152	184	177	209	241	230	233	239	236	242
Other or unknown race/ethnicity	5,708	5,999	5,693	5,700	4,355	4,873	4,570	4,479	4,184	3,756
Temporary residents	38,199	41,341	41,454	39,278	36,986	35,466	35,037	36,474	37,762	41,417

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-7

Top 20 schools enrolling Asian, black, Hispanic, and American Indian/Alaskan Native graduate students in science and engineering: 1999

Rank	Asian/Pacific Islander		Black, non-Hispanic		Hispanic		American Indian/Alaskan Native	
	Academic institution	Number of students	Academic institution	Number of students	Academic institution	Number of students	Academic institution	Number of students
	Total, all institutions	27,562	Total, all institutions	20,341	Total, all institutions	16,514	Total, all institutions	1,557
1	New Jersey Institute Technology	712	Howard University*	467	University of Puerto Rico–Rio Piedras**	1,029	Oklahoma State University	49
2	University of California–Los Angeles	689	Southern University A&M*	438	Caribbean Center for Advanced Studies**	566	University of Oklahoma	44
3	Stanford University	662	Texas Southern University*	328	University of Puerto Rico–Mayaguez**	544	Northeastern State University (OK)	36
4	San Jose State University	653	North Carolina Central University*	295	Florida International University**	335	University of Kansas	31
5	University of Houston	535	Long Island University	294	California State University–Los Angeles**	267	Arizona State University Main	27
6	University of Southern California	533	Teachers College, Columbia University	261	University of Texas–El Paso**	220	University of New Mexico	26
7	University of California–Berkeley	494	American University	245	University of Florida	215	Northern Arizona University	24
8	Massachusetts Institute of Technology	433	North Carolina A&T State University*	237	University of California–Los Angeles	207	University of Washington–Seattle	24
9	De Paul University	403	George Washington University	232	Nova Southeastern University	194	University of Montana	22
10	George Mason University	368	University of Michigan	232	University of Southern California	191	University of Colorado	21
11	California State University–Hayward	348	De Paul University	227	University of California–Berkeley	183	University of California–Berkeley	20
12	University of Hawaii–Manoa	307	Georgia State University	226	University of New Mexico**	181	Stanford University	19
13	University of Washington–Seattle	303	Louisiana State University	226	University of Colorado	171	University of California–Davis	19
14	University of California–Davis	295	CUNY John Jay College Criminal Justice	224	Texas A&M University	168	University of California–Los Angeles	19
15	California State University–Long Beach	284	Georgia Institute of Technology	217	National University	167	University of Minnesota	16
16	New York University	280	Chicago State University	212	California State University–Long Beach	162	Harvard University	14
17	University of California–San Diego	276	University of Maryland–College Park	210	San Diego State University**	155	Portland State University	14
18	University of Illinois at Urbana-Champaign	274	Clark Atlanta University*	209	Arizona State University	150	San Diego State University	14
19	University of Michigan	272	National University	197	University of Texas–Pan American**	150	University of Arizona	14
20	Rutgers University	266	Jackson State University*	193	University of Texas–Austin	150	University of Idaho	14

* historically black college or university

** Hispanic-serving institution

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering

Appendix table 4-8

Female science and engineering graduate students, by field, citizenship, and race/ethnicity: 1994–99

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Field, citizenship, and race/ethnicity	1994	1995	1996	1997	1998	1999
Science and engineering, all females	159,117	160,201	161,661	162,027	163,445	168,468
U.S. citizens and permanent residents	133,226	134,024	134,530	133,726	133,375	135,518
White, non-Hispanic	102,081	99,834	98,695	96,523	94,949	95,005
Asian/Pacific Islander	9,323	9,532	9,980	10,320	10,814	11,515
Black, non-Hispanic	9,561	10,071	10,817	11,014	11,330	11,749
Hispanic	6,080	6,707	6,919	7,283	7,636	8,291
American Indian/Alaskan Native	689	763	770	796	810	812
Other or unknown race/ethnicity	5,492	7,117	7,349	7,790	7,836	8,146
Temporary residents	25,891	26,177	27,131	28,301	30,070	32,950
Physical sciences, all females	9,159	9,080	9,042	8,841	8,751	8,905
U.S. citizens and permanent residents	6,190	6,045	6,001	5,830	5,831	5,862
White, non-Hispanic	4,677	4,477	4,369	4,174	4,168	4,172
Asian/Pacific Islander	670	621	647	593	610	636
Black, non-Hispanic	359	368	436	444	432	402
Hispanic	231	262	287	283	307	339
American Indian/Alaskan Native	18	19	18	24	23	29
Other or unknown race/ethnicity	235	298	244	312	291	284
Temporary residents	2,969	3,035	3,041	3,011	2,920	3,043
Earth, atmospheric, and ocean sciences, all females	5,323	5,436	5,448	5,419	5,569	5,720
U.S. citizens and permanent residents	4,446	4,639	4,676	4,700	4,806	4,861
White, non-Hispanic	3,923	4,047	4,054	4,042	4,066	4,141
Asian/Pacific Islander	155	159	160	164	186	192
Black, non-Hispanic	85	99	104	98	99	101
Hispanic	127	142	144	163	168	186
American Indian/Alaskan Native	23	21	29	35	40	31
Other or unknown race/ethnicity	133	171	185	198	247	210
Temporary residents	877	797	772	719	753	859
Mathematical sciences, all females	6,535	6,261	6,221	5,872	5,989	6,041
U.S. citizens and permanent residents	4,846	4,605	4,559	4,173	4,206	3,982
White, non-Hispanic	3,672	3,429	3,291	3,038	3,041	2,862
Asian/Pacific Islander	473	452	523	430	470	437
Black, non-Hispanic	330	304	343	310	274	270
Hispanic	128	152	159	173	178	176
American Indian/Alaskan Native	12	27	17	14	18	18
Other or unknown race/ethnicity	231	241	226	208	225	219
Temporary residents	1,689	1,656	1,662	1,699	1,783	2,059
Computer science, all females	8,087	8,133	8,797	9,881	10,802	12,570
U.S. citizens and permanent residents	5,668	5,537	5,736	6,198	6,577	7,437
White, non-Hispanic	3,269	3,083	3,040	3,143	3,198	3,534
Asian/Pacific Islander	1,357	1,337	1,432	1,648	1,920	2,322
Black, non-Hispanic	486	503	560	535	591	677
Hispanic	180	162	177	210	195	213
American Indian/Alaskan Native	8	15	14	17	24	24
Other or unknown race/ethnicity	388	437	513	645	649	667
Temporary residents	2,419	2,596	3,061	3,683	4,225	5,133

See SOURCE at end of table.

Appendix table 4-8

Female science and engineering graduate students, by field, citizenship, and race/ethnicity: 1990–99

Page 2 of 2

Field, citizenship, and race/ethnicity	1994	1995	1996	1997	1998	1999
Agricultural sciences, all females	4,318	4,465	4,458	4,572	4,725	4,915
U.S. citizens and permanent residents	3,475	3,600	3,610	3,751	3,898	4,084
White, non-Hispanic	2,995	3,018	3,035	3,138	3,249	3,437
Asian/Pacific Islander	110	129	140	138	150	167
Black, non-Hispanic	121	147	140	127	164	142
Hispanic	124	134	168	162	177	206
American Indian/Alaskan Native	17	30	26	28	25	22
Other or unknown race/ethnicity	108	142	101	158	133	110
Temporary residents	843	865	848	821	827	831
Biological sciences, all females	28,161	28,862	28,783	28,630	29,096	29,760
U.S. citizens and permanent residents	22,595	23,385	23,488	23,472	23,599	24,266
White, non-Hispanic	17,921	18,124	18,045	17,543	17,559	17,892
Asian/Pacific Islander	1,932	2,136	2,208	2,310	2,338	2,359
Black, non-Hispanic	1,038	1,188	1,285	1,387	1,388	1,472
Hispanic	882	969	996	1,085	1,123	1,220
American Indian/Alaskan Native	106	118	107	107	104	107
Other or unknown race/ethnicity	716	850	847	1,040	1,087	1,216
Temporary residents	5,566	5,477	5,295	5,158	5,497	5,494
Psychology, all females	38,138	37,764	37,747	37,619	37,462	37,377
U.S. citizens and permanent residents	36,736	36,534	36,482	36,361	36,074	35,927
White, non-Hispanic	29,350	28,163	27,753	27,408	26,707	26,133
Asian/Pacific Islander	1,148	1,182	1,292	1,399	1,468	1,507
Black, non-Hispanic	2,678	2,542	2,644	2,736	2,926	2,872
Hispanic	1,780	2,037	2,130	2,215	2,347	2,617
American Indian/Alaskan Native	220	237	248	223	224	215
Other or unknown race/ethnicity	1,560	2,373	2,415	2,380	2,402	2,583
Temporary residents	1,402	1,230	1,265	1,258	1,388	1,450
Social sciences, all females	41,349	42,193	42,920	42,459	42,044	43,337
U.S. citizens and permanent residents	36,064	36,703	37,146	36,699	35,989	36,729
White, non-Hispanic	27,048	26,619	26,490	25,756	24,784	24,959
Asian/Pacific Islander	1,659	1,735	1,796	1,856	1,837	1,885
Black, non-Hispanic	3,647	4,021	4,362	4,461	4,576	4,836
Hispanic	2,068	2,237	2,189	2,353	2,454	2,647
American Indian/Alaskan Native	223	247	268	289	289	299
Other or unknown race/ethnicity	1,419	1,844	2,041	1,984	2,049	2,103
Temporary residents	5,285	5,490	5,774	5,760	6,055	6,608
Engineering, all females	18,047	18,007	18,245	18,734	19,007	19,843
U.S. citizens and permanent residents	13,206	12,976	12,832	12,542	12,395	12,370
White, non-Hispanic	9,226	8,874	8,618	8,281	8,177	7,875
Asian/Pacific Islander	1,819	1,781	1,782	1,782	1,835	2,010
Black, non-Hispanic	817	899	943	916	880	977
Hispanic	580	612	669	639	687	687
American Indian/Alaskan Native	62	49	43	59	63	67
Other or unknown race/ethnicity	702	761	777	865	753	754
Temporary residents	4,841	5,031	5,413	6,192	6,612	7,473

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-9

Male science and engineering graduate students, by field, citizenship, and race/ethnicity: 1994–99

Page 1 of 2

Field, citizenship, and race/ethnicity	1994	1995	1996	1997	1998	1999
Science and engineering, all males	272,116	262,332	253,597	245,629	241,458	242,840
U.S. citizens and permanent residents	195,847	189,969	182,571	174,939	169,500	165,886
White, non-Hispanic	153,620	146,059	139,367	131,495	125,740	121,860
Asian/Pacific Islander	17,152	16,372	15,948	15,687	15,895	16,047
Black, non-Hispanic	8,049	8,211	8,251	8,332	8,324	8,592
Hispanic	7,197	7,404	7,649	7,697	7,840	8,223
American Indian/Alaskan Native	693	753	768	804	797	745
Other or unknown race/ethnicity	9,136	11,170	10,588	10,924	10,904	10,419
Temporary residents	76,269	72,363	71,026	70,690	71,958	76,954
Physical sciences, all males	25,290	24,308	23,282	22,237	21,820	21,784
U.S. citizens and permanent residents	16,550	15,934	15,145	14,353	14,002	13,705
White, non-Hispanic	13,745	12,998	12,381	11,567	11,046	10,876
Asian/Pacific Islander	1,253	1,159	1,096	1,044	1,150	1,047
Black, non-Hispanic	497	529	550	508	481	501
Hispanic	444	469	455	499	525	552
American Indian/Alaskan Native	49	57	42	46	41	40
Other or unknown race/ethnicity	562	722	621	689	759	689
Temporary residents	8,740	8,374	8,137	7,884	7,818	8,079
Earth, atmospheric, and ocean sciences, all males	10,645	10,286	9,737	9,146	8,690	8,362
U.S. citizens and permanent residents	8,258	8,136	7,743	7,350	6,954	6,699
White, non-Hispanic	7,368	7,204	6,821	6,377	6,033	5,881
Asian/Pacific Islander	294	260	249	253	238	208
Black, non-Hispanic	117	116	115	105	103	112
Hispanic	212	223	230	236	202	196
American Indian/Alaskan Native	25	31	36	47	44	32
Other or unknown race/ethnicity	242	302	292	332	334	270
Temporary residents	2,387	2,150	1,994	1,796	1,736	1,663
Mathematical sciences, all males	13,044	12,248	11,794	10,857	10,499	10,213
U.S. citizens and permanent residents	8,670	8,095	7,695	7,012	6,861	6,350
White, non-Hispanic	6,824	6,230	5,910	5,322	5,059	4,800
Asian/Pacific Islander	735	669	702	622	704	565
Black, non-Hispanic	343	385	368	347	339	324
Hispanic	241	248	266	254	276	270
American Indian/Alaskan Native	24	43	24	29	16	12
Other or unknown race/ethnicity	503	520	425	438	467	379
Temporary residents	4,374	4,153	4,099	3,845	3,638	3,863
Computer science, all males	26,071	25,325	25,829	26,110	27,225	29,990
U.S. citizens and permanent residents	17,428	17,126	17,043	16,876	17,028	17,968
White, non-Hispanic	12,483	11,690	11,439	10,919	10,750	10,889
Asian/Pacific Islander	2,689	2,706	2,834	2,978	3,299	3,834
Black, non-Hispanic	696	652	716	765	764	824
Hispanic	471	502	523	513	559	659
American Indian/Alaskan Native	36	41	40	43	68	51
Other or unknown race/ethnicity	1,053	1,535	1,491	1,658	1,588	1,711
Temporary residents	8,643	8,199	8,786	9,234	10,197	12,022

See SOURCE at end of table

Appendix table 4-9

Male science and engineering graduate students, by field, citizenship, and race/ethnicity: 1990–99

Page 2 of 2

Field, citizenship, and race/ethnicity	1994	1995	1996	1997	1998	1999
Agricultural sciences, all males	7,955	7,985	7,551	7,321	7,152	7,121
U.S. citizens and permanent residents	5,657	5,753	5,450	5,416	5,382	5,461
White, non-Hispanic	5,037	5,031	4,778	4,678	4,662	4,759
Asian/Pacific Islander	171	151	143	164	155	139
Black, non-Hispanic	119	151	132	105	149	135
Hispanic	144	155	206	246	210	222
American Indian/Alaskan Native	21	30	23	34	45	46
Other or unknown race/ethnicity	165	235	168	189	161	160
Temporary residents	2,298	2,232	2,101	1,905	1,770	1,660
Biological sciences, all males	29,991	29,913	29,387	28,510	28,028	27,560
U.S. citizens and permanent residents	22,724	23,163	23,170	22,480	22,053	21,747
White, non-Hispanic	18,471	18,401	18,300	17,479	17,025	16,637
Asian/Pacific Islander	2,022	2,166	2,257	2,171	2,101	2,102
Black, non-Hispanic	671	691	725	780	787	786
Hispanic	769	855	852	901	924	961
American Indian/Alaskan Native	77	87	93	91	88	80
Other or unknown race/ethnicity	714	963	943	1,058	1,128	1,181
Temporary residents	7,267	6,750	6,217	6,030	5,975	5,813
Psychology, all males	16,416	15,877	15,375	15,507	15,095	14,497
U.S. citizens and permanent residents	15,475	15,020	14,667	14,757	14,297	13,707
White, non-Hispanic	12,712	11,983	11,574	11,316	10,915	10,223
Asian/Pacific Islander	435	416	465	510	551	537
Black, non-Hispanic	851	817	808	908	887	915
Hispanic	705	762	807	860	881	958
American Indian/Alaskan Native	97	93	111	118	87	88
Other or unknown race/ethnicity	675	949	902	1,045	976	986
Temporary residents	941	857	708	750	798	790
Social sciences, all males	47,758	47,224	45,698	43,605	41,987	41,688
U.S. citizens and permanent residents	38,284	38,011	36,338	34,641	33,111	32,568
White, non-Hispanic	30,229	29,474	27,706	26,063	24,367	23,656
Asian/Pacific Islander	1,585	1,608	1,544	1,594	1,527	1,471
Black, non-Hispanic	2,788	2,913	2,883	2,852	2,872	3,006
Hispanic	1,928	1,994	2,043	2,015	2,050	2,173
American Indian/Alaskan Native	185	190	209	216	235	221
Other or unknown race/ethnicity	1,569	1,832	1,953	1,901	2,060	2,041
Temporary residents	9,474	9,213	9,360	8,964	8,876	9,120
Engineering, all males	94,946	89,166	84,944	82,336	80,962	81,625
U.S. citizens and permanent residents	62,801	58,731	55,320	52,054	49,812	47,681
White, non-Hispanic	46,751	43,048	40,458	37,774	35,883	34,139
Asian/Pacific Islander	7,968	7,237	6,658	6,351	6,170	6,144
Black, non-Hispanic	1,967	1,957	1,954	1,962	1,942	1,989
Hispanic	2,283	2,196	2,267	2,173	2,213	2,232
American Indian/Alaskan Native	179	181	190	180	173	175
Other or unknown race/ethnicity	3,653	4,112	3,793	3,614	3,431	3,002
Temporary residents	32,145	30,435	29,624	30,282	31,150	33,944

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-10

Black graduate students enrolled in S&E in all institutions and in historically black colleges and universities, by field: 1992–99

Field and institution type	1992	1993	1994	1995	1996	1997	1998	1999
	Total number of black students							
All institutions, total science and engineering	15,445	17,116	17,610	18,282	19,068	19,346	19,654	20,341
Sciences	13,069	14,556	14,826	15,426	16,171	16,468	16,832	17,375
Physical sciences	807	843	856	897	986	952	913	903
Earth, atmospheric, and ocean sciences	201	224	202	215	219	203	202	213
Mathematical sciences	579	710	673	689	711	657	613	594
Computer science	1,106	1,167	1,182	1,155	1,276	1,300	1,355	1,501
Agricultural sciences	210	238	240	298	272	232	313	277
Biological sciences	1,493	1,737	1,709	1,879	2,010	2,167	2,175	2,258
Psychology	2,758	3,284	3,529	3,359	3,452	3,644	3,813	3,787
Social sciences	5,915	6,353	6,435	6,934	7,245	7,313	7,448	7,842
Engineering	2,376	2,560	2,784	2,856	2,897	2,878	2,822	2,966
All HBCUs, total science and engineering	2,075	2,433	2,768	2,906	3,174	3,279	3,082	3,233
Sciences	1,898	2,221	2,515	2,6[illegible]2	2,883	2,995	2,799	2,939
Physical sciences	179	211	231	253	279	286	229	179
Earth, atmospheric, and ocean sciences	30	42	30	38	34	43	40	36
Mathematical sciences	111	169	155	139	157	128	107	129
Computer science	200	190	227	210	217	219	199	216
Agricultural sciences	70	84	102	130	111	88	137	155
Biological sciences	306	403	453	492	543	593	563	572
Psychology	352	428	489	413	430	490	399	451
Social sciences	650	694	828	937	1,112	1,148	1,125	1,201
Engineering	177	212	253	294	291	284	283	294
	Percent of black students in HBCUs							
Total science and engineering	13.4	14.3	15.7	15.9	16.6	16.9	15.7	15.9
Sciences	14.5	15.4	17.0	16.9	17.8	18.2	16.6	16.9
Physical sciences	22.2	24.9	27.0	28.2	28.3	30.0	25.1	19.8
Earth, atmospheric, and ocean sciences	14.9	18.8	14.9	17.7	15.5	21.2	19.8	16.9
Mathematical sciences	19.2	25.9	23.0	20.2	22.1	19.5	17.5	21.7
Computer science	18.1	16.3	19.2	18.2	17.0	16.8	14.7	14.4
Agricultural sciences	33.3	40.5	42.5	43.6	40.8	37.9	43.8	56.0
Biological sciences	20.5	23.1	26.5	26.2	27.0	27.4	25.9	25.3
Psychology	12.8	12.8	13.9	12.3	12.5	13.4	10.5	11.9
Social sciences	11.0	10.9	12.9	13.5	15.3	15.7	15.1	15.3
Engineering	7.4	8.2	9.1	10.3	10.0	9.9	10.0	9.9

HBCU historically black college or university

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-11

Hispanic graduate students enrolled in S&E in all institutions and in Hispanic-serving institutions, by field: 1990–99

Field and institution type	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Total number of Hispanic students									
All institutions, total science and engineering	10,159	11,045	12,246	13,381	13,277	14,111	14,568	14,980	15,476	16,514
Sciences	8,273	8,921	9,783	10,686	10,414	11,303	11,632	12,168	12,576	13,595
Physical sciences	642	649	680	747	675	731	742	782	832	891
Earth, atmospheric, and ocean sciences	241	250	308	370	339	365	374	399	370	382
Mathematical sciences	351	349	376	415	369	400	425	427	454	446
Computer science	565	631	706	695	631	664	700	723	754	872
Agricultural sciences	272	279	279	309	268	289	374	408	387	428
Biological sciences	1,220	1,374	1,459	1,649	1,651	1,824	1,848	1,986	2,047	2,181
Psychology	2,160	2,365	2,371	2,562	2,485	2,799	2,937	3,075	3,228	3,575
Social sciences	2,822	3,024	3,604	3,939	3,996	4,231	4,232	4,368	4,504	4,820
Engineering	1,886	2,124	2,463	2,695	2,863	2,808	2,936	2,812	2,900	2,919
All HSI, total science and engineering	2,935	3,147	3,369	3,712	3,414	3,705	3,771	3,930	4,342	4,834
Sciences	2,552	2,695	2,813	3,109	2,825	3,049	3,116	3,332	3,698	4,211
Physical sciences	163	151	174	200	192	197	228	233	274	316
Earth, atmospheric, and ocean sciences	52	50	70	100	95	97	112	111	113	120
Mathematical sciences	120	89	100	107	72	90	103	115	145	136
Computer science	78	74	123	102	91	98	72	80	100	109
Agricultural sciences	74	78	85	105	67	91	126	159	160	177
Biological sciences	288	411	376	453	453	480	481	524	554	589
Psychology	698	820	652	701	596	734	745	799	1,020	1,237
Social sciences	1,079	1,022	1,233	1,341	1,259	1,262	1,249	1,311	1,332	1,527
Engineering	383	452	556	603	589	656	655	598	644	623
	Percent of Hispanic students in HSIs									
Total science and engineering	28.9	28.5	27.5	27.7	25.7	26.3	25.9	26.2	28.1	29.3
Sciences	30.8	30.2	28.8	29.1	27.1	27.0	26.8	27.4	29.4	31.0
Physical sciences	25.4	23.3	25.6	26.8	28.4	26.9	30.7	29.8	32.9	35.5
Earth, atmospheric, and ocean sciences	21.6	20.0	22.7	27.0	28.0	26.6	29.9	27.8	30.5	31.4
Mathematical sciences	34.2	25.5	26.6	25.8	19.5	22.5	24.2	26.9	31.9	30.5
Computer science	13.8	11.7	17.4	14.7	14.4	14.8	10.3	11.1	13.3	12.5
Agricultural sciences	27.2	28.0	30.5	34.0	25.0	31.5	33.7	39.0	41.3	41.4
Biological sciences	23.6	29.9	25.8	27.5	27.4	26.3	26.0	26.4	27.1	27.0
Psychology	32.3	34.7	27.5	27.4	24.0	26.2	25.4	26.0	31.6	34.6
Social sciences	38.2	33.8	34.2	34.0	31.5	29.8	29.5	30.0	29.6	31.7
Engineering	20.3	21.3	22.6	22.4	20.6	23.4	22.3	21.3	22.2	21.3

HSI Hispanic-serving institution

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 4-12

Graduate student enrollment, by disability status, selected demographic characteristics, and attendance status: 1996

Characteristic	Total enrollment	Students without disabilities	Students with disabilities
	Number		
Total	2,784,000	2,695,000	89,000
	Percent distribution		
Sex			
Male	45.7	46.2	31.3
Female	54.3	53.8	68.7
Race/ethnicity			
White, non-Hispanic	80.6	80.9	73.9
Asian/Pacific Islander	8.1	8.2	5.5
Black, non-Hispanic	6.4	6.2	10.7
Hispanic	4.9	4.7	9.8
American Indian/Alaskan Native	S	S	S
Other	S	S	S
Age			
15 to 23	9.2	9.3	7.6
24 to 29	42.7	43.0	32.3
30 or older	48.1	47.7	60.0
Attendance status			
Part time	67.5	65.7	65.8
Full time	32.5	32.5	34.2

S suppressed for reasons of confidentiality and/or data reliability

NOTES: Data include first-professional students (i.e., those in chiropractic medicine, dentistry, medicine, optometry, osteopathic medicine, pharmacy, podiatry, and veterinary medicine). Details may not add to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics: 1998*, NCES 1999-036 (Washington, DC, 1999).

Appendix table 4-13

Graduate student enrollment, by disability status and field: 1996

Field	Total enrollment		With disabilities		Without disabilities	
	Number					
Total	2,784,000		89,000		2,695,000	
	Percent distribution					
Total	100.0		100.0		100.0	
Social/behavioral sciences	7.8	(0.8)	7.9	(0.8)	5.8	(2.0)
Life and physical sciences	6.3	(0.9)	6.5	(0.9)	2.1	(1.4)
Engineering/computer science/math	8.3	(0.9)	8.4	(1.0)	3.7	(2.0)
Humanities	9.7	(1.5)	9.8	(1.5)	6.2	(2.1)
Education	26.1	(1.6)	26.2	(1.6)	23.8	(5.5)
Business/management	17.1	(1.5)	17.1	(1.5)	14.8	(4.2)
Health	13.0	(1.4)	12.5	(1.4)	28.6	(7.9)
Law	5.2	(0.6)	5.2	(0.6)	4.1	(1.0)
Other	2.9	(0.5)	2.9	(0.5)	3.8	(2.5)
Missing/undeclared	3.5	(0.6)	3.5	(0.6)	7.1	(4.4)

NOTES: Standard errors are in parentheses. Details may not add to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study, Data Analysis System.

Appendix table 4-14

Science and engineering graduate students, by field, sex, and enrollment status: 1999

Page 1 of 2

Field	All enrollment			Male enrollment			Female enrollment		
	Total	Full time	Part time	Total	Full time	Part time	Total	Full time	Part time
Science and engineering, total	411,308	283,915	127,393	242,840	169,025	73,815	168,468	114,890	53,578
Physical sciences	30,689	26,640	4,049	21,784	19,076	2,708	8,905	7,564	1,341
Astronomy	832	808	24	607	590	17	225	218	7
Chemistry	18,414	15,963	2,451	11,804	10,322	1,482	6,610	5,641	969
Physics	10,869	9,661	1,208	8,996	8,028	968	1,873	1,633	240
Physical sciences, other	574	208	366	377	136	241	197	72	125
Earth, atmospheric, and ocean sciences	14,082	10,492	3,590	8,362	6,180	2,182	5,720	4,312	1,408
Atmospheric sciences	913	793	120	671	567	104	242	226	16
Geosciences	6,652	5,239	1,413	4,245	3,315	930	2,407	1,924	483
Ocean sciences	2,608	2,130	478	1,398	1,128	270	1,210	1,002	208
Earth, atmospheric, and ocean sciences, other	3,909	2,330	1,579	2,048	1,170	878	1,861	1,160	701
Mathematics and applied mathematics	13,530	9,681	3,849	8,665	6,477	2,188	4,865	3,204	1,661
Statistics	2,724	2,111	613	1,548	1,183	365	1,176	928	248
Computer science	42,560	22,708	19,852	29,990	16,327	13,663	12,570	6,381	6,189
Agricultural sciences	12,036	9,210	2,826	7,121	5,403	1,718	4,915	3,807	1,108
Biological sciences	57,320	47,268	10,052	27,560	23,285	4,275	29,760	23,983	5,777
Anatomy	913	871	42	482	463	19	431	408	23
Biochemistry	5,120	4,819	301	2,846	2,703	143	2,274	2,116	158
Biology	13,996	9,908	4,088	6,850	4,959	1,891	7,146	4,949	2,197
Biometry and epidemiology	3,575	2,604	971	1,308	961	347	2,267	1,643	624
Biophysics	710	681	29	497	479	18	213	202	11
Botany	2,261	1,950	311	1,168	1,002	166	1,093	948	145
Cell and molecular biology	4,402	4,039	363	2,160	2,036	124	2,242	2,003	239
Ecology	1,687	1,240	447	817	595	222	870	645	225
Entomology and parasitology	1,145	971	174	739	619	120	406	352	54
Genetics	1,767	1,667	100	760	730	30	1,007	937	70
Microbiology, immunology, and virology	4,910	4,554	356	2,407	2,253	154	2,503	2,301	202
Nutrition	4,449	3,153	1,296	1,069	796	273	3,380	2,357	1,023
Pathology	1,580	1,364	216	776	669	107	804	695	109
Pharmacology	2,757	2,579	178	1,414	1,316	98	1,343	1,263	80
Physiology	2,100	1,901	199	1,190	1,091	99	910	810	100
Zoology	1,614	1,382	232	907	774	133	707	608	99
Biological sciences, other	4,334	3,585	749	2,170	1,839	331	2,164	1,746	418
Psychology	51,874	34,715	17,159	14,497	10,085	4,412	37,377	24,630	12,747
Psychology, combined program	16,353	11,649	4,704	4,896	3,588	1,308	11,457	8,061	3,396
Psychology, except clinical	22,805	13,207	9,598	6,107	3,721	2,386	16,698	9,486	7,212
Clinical psychology	12,716	9,859	2,857	3,494	2,776	718	9,222	7,083	2,139

See SOURCE at end of table.

Appendix table 4-14

Science and engineering graduate students, by field, sex, and enrollment status: 1999

Page 2 of 2

Field	All enrollment			Male enrollment			Female enrollment		
	Total	Full time	Part time	Total	Full time	Part time	Total	Full time	Part time
Social sciences	85,025	53,258	31,767	41,688	26,671	15,017	43,337	26,587	16,750
Agricultural economics	2,014	1,686	328	1,301	1,093	208	713	593	120
Anthropology (cultural and social)	7,633	5,814	1,819	2,989	2,295	694	4,644	3,519	1,125
Economics	10,562	8,390	2,172	7,063	5,655	1,408	3,499	2,735	764
Geography	4,250	2,786	1,464	2,547	1,636	911	1,703	1,150	553
History and philosophy of science	557	429	128	345	267	78	212	162	50
Linguistics	2,799	2,182	617	966	782	184	1,833	1,400	433
Political science/public administration	31,398	16,138	15,260	15,816	8,494	7,322	15,582	7,644	7,938
Sociology	8,966	6,278	2,688	3,227	2,312	915	5,739	3,966	1,773
Sociology/anthropology	741	518	223	271	180	91	470	338	132
Social sciences, other	16,105	9,037	7,068	7,163	3,957	3,206	8,942	5,080	3,862
Engineering	101,468	67,832	33,636	81,625	54,338	27,287	19,843	13,494	6,349
Aerospace engineering	3,349	2,645	704	2,926	2,320	606	423	325	98
Agricultural engineering	934	767	167	683	546	137	251	221	30
Biomedical engineering	3,121	2,742	379	2,117	1,840	277	1,004	902	102
Chemical engineering	6,849	5,569	1,280	5,123	4,178	945	1,726	1,391	335
Civil engineering	16,190	11,178	5,012	12,010	8,118	3,892	4,180	3,060	1,120
Electrical engineering	31,368	20,224	11,144	26,402	16,967	9,435	4,966	3,257	1,709
Engineering science and engineering physics	1,627	1,035	592	1,308	838	470	319	197	122
Industrial/manufacturing engineering	10,886	5,284	5,602	8,463	4,198	4,265	2,423	1,086	1,337
Mechanical engineering	14,956	10,333	4,623	13,169	9,072	4,097	1,787	1,261	526
Metallurgical and materials engineering	4,451	3,537	914	3,379	2,699	680	1,072	838	234
Mining engineering	328	258	70	273	215	58	55	43	12
Nuclear engineering	830	641	189	686	530	156	144	111	33
Petroleum engineering	642	535	107	560	462	98	82	73	9
Engineering, other	5,937	3,084	2,853	4,526	2,355	2,171	1,411	729	682

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

Appendix table 4-15

Science and engineering graduate students, by enrollment status, race/ethnicity, and field: 1999

Enrollment status and race/ethnicity	Science and engineering, total	Physical sciences	Earth, atmospheric, and ocean sciences	Mathematical sciences	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences	Engineering
Total	301,404	19,567	11,560	10,332	25,405	9,545	46,013	49,634	69,297	60,051
White, non-Hispanic	216,865	15,048	10,022	7,662	14,423	8,196	34,529	36,356	48,615	42,014
Asian/Pacific Islander	27,562	1,683	400	1,002	6,156	306	4,461	2,044	3,356	8,154
Black, non-Hispanic	20,341	903	213	594	1,501	277	2,258	3,787	7,842	2,966
Hispanic	16,514	891	382	446	872	428	2,181	3,575	4,820	2,919
American Indian/Alaskan Native	1,557	69	63	30	75	68	187	303	520	242
Other or unknown race/ethnicity	18,565	973	480	598	2,378	270	2,397	3,569	4,144	3,756
Full-time students	190,146	16,314	8,273	6,589	9,960	7,048	36,949	32,977	39,790	32,246
White, non-Hispanic	140,377	12,796	7,178	4,991	5,617	6,004	27,722	24,876	28,841	22,352
Asian/Pacific Islander	18,065	1,401	292	626	2,869	245	3,864	1,530	2,258	4,980
Black, non-Hispanic	11,227	700	137	342	540	202	1,709	2,211	3,779	1,607
Hispanic	10,338	727	294	275	296	335	1,759	2,458	2,547	1,647
American Indian/Alaskan Native	1,029	62	42	20	33	50	142	222	337	121
Other or unknown race/ethnicity	9,110	628	330	335	605	212	1,753	1,680	2,028	1,539
Part-time students	111,258	3,253	3,287	3,743	15,445	2,497	9,064	16,657	29,507	27,805
White, non-Hispanic	76,488	2,252	2,844	2,671	8,806	2,192	6,807	11,480	19,774	19,662
Asian/Pacific Islander	9,497	282	108	376	3,287	61	597	514	1,098	3,174
Black, non-Hispanic	9,114	203	76	252	961	75	549	1,576	4,063	1,359
Hispanic	6,176	164	88	171	576	93	422	1,117	2,273	1,272
American Indian/Alaskan Native	528	7	21	10	42	18	45	81	183	121
Other or unknown race/ethnicity	9,455	345	150	263	1,773	58	644	1,889	2,116	2,217

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering

Appendix table 4-16

Full-time graduate students in science and engineering, by sex, primary source of support, and field: 1999

Page 1 of 3

Field and sex	Total, all sources	Federal support									Institutional support	Other outside support			Self-support
				HHS											
		Total Federal	DOD	Total HHS	NIH	Other HHS	NASA	NSF	USDA	All other Federal		Other outside support, total	All other U.S. support	Foreign support	
Both sexes, total science and engineering	283,915	57,438	7,674	17,256	15,998	1,258	2,582	13,728	2,589	13,609	122,322	23,776	20,297	3,479	80,379
Sciences	216,083	41,525	3,322	16,295	15,154	1,141	1,436	8,769	2,360	9,343	97,111	14,279	11,884	2,395	63,168
Physical sciences	26,640	9,241	883	1,846	1,657	189	568	3,278	33	2,633	14,123	1,926	1,754	172	1,350
Earth, atmospheric, and ocean sciences	10,492	2,987	339	42	22	20	411	1,128	55	1,012	4,732	844	682	162	1,929
Mathematical sciences	11,792	1,104	227	105	78	27	15	441	7	309	8,278	423	297	126	1,987
Computer science	22,708	3,361	1,213	107	64	43	111	1,309	20	601	7,057	1,560	1,424	136	10,730
Agricultural sciences	9,210	1,911	28	28	17	11	55	107	1,063	630	3,797	1,569	1,310	259	1,933
Biological sciences	47,268	16,531	337	12,268	11,774	494	101	1,504	843	1,478	20,500	3,368	2,898	470	6,869
Psychology	34,715	3,255	124	1,554	1,275	279	41	310	13	1,213	13,252	1,400	1,344	56	16,808
Social sciences	53,258	3,135	171	345	267	78	134	692	326	1,467	25,372	3,189	2,175	1,014	21,562
Engineering	67,832	15,913	4,352	961	844	117	1,146	4,959	229	4,266	25,211	9,497	8,413	1,084	17,211
Aerospace engineering	2,645	983	438	4	3	1	257	98	0	186	797	348	288	60	517
Chemical engineering	5,569	1,657	163	149	127	22	102	744	25	474	2,294	966	891	75	652
Civil engineering	11,178	1,672	157	44	39	5	56	544	35	836	4,852	1,089	936	153	3,565
Electrical engineering	20,224	4,610	1,842	102	85	17	279	1,477	10	900	7,114	2,829	2,551	278	5,671
Industrial engineering	5,284	675	236	31	18	13	26	213	2	167	1,870	564	477	87	2,175
Mechanical engineering	10,333	2,596	713	112	87	25	242	886	22	621	4,037	1,603	1,432	171	2,097
Metallurgical and materials engineering	3,537	1,336	320	14	6	8	60	520	12	410	1,081	702	636	66	418
Other engineering	9,062	2,384	483	505	479	26	124	477	123	672	3,166	1,396	1,202	194	2,116
Men, total science and engineering	169,025	37,670	6,379	9,075	8,454	621	1,903	9,745	1,452	9,116	72,171	16,327	13,719	2,608	42,857
Sciences	114,687	24,748	2,568	8,369	7,838	531	982	5,859	1,290	5,680	52,343	8,500	6,843	1,657	29,096
Physical sciences	19,076	6,890	710	1,224	1,101	123	426	2,444	19	2,067	9,858	1,386	1,252	134	942
Earth, atmospheric, and ocean sciences	6,180	1,851	236	25	14	11	255	683	30	622	2,711	546	426	120	1,072
Mathematical sciences	7,660	813	196	61	41	20	10	325	6	215	5,420	286	188	98	1,141
Computer science	16,327	2,719	1,031	85	53	32	89	1,035	12	467	5,179	1,196	1,075	121	7,234

See information and SOURCE at end of table

Appendix table 4-16

Full-time graduate students in science and engineering, by sex, primary source of support, and field: 1999

Page 2 of 3

Field and sex	Total, all sources	Federal support									Institutional support	Other outside support			Self-support
		Total Federal	DOD	HHS			NASA	NSF	USDA	All other Federal		Other outside support, total	All other U.S. support	Foreign support	
				Total HHS	NIH	Other HHS									
Agricultural sciences	5,403	1,127	17	20	13	7	38	59	633	360	2,165	1,011	827	184	1,100
Biological sciences	23,285	8,495	173	6,279	6,051	228	64	810	393	776	10,030	1,792	1,503	289	2,968
Psychology	10,085	1,210	75	550	470	80	17	130	4	434	4,087	442	415	27	4,346
Social sciences	26,671	1,641	130	125	95	30	83	373	193	737	12,893	1,842	1,167	675	10,295
Engineering	54,338	12,924	3,811	706	616	90	921	3,866	182	3,438	19,828	7,827	6,875	952	13,759
Aerospace engineering	2,320	885	407	4	3	1	223	84	0	167	657	317	260	57	461
Chemical engineering	4,178	1,214	134	109	91	18	69	520	14	368	1,713	753	695	58	498
Civil engineering	8,118	1,207	131	23	23	0	37	391	24	601	3,454	818	690	128	2,639
Electrical engineering	16,967	3,945	1,612	81	67	14	233	1,239	9	771	5,904	2,430	2,177	253	4,688
Industrial engineering	4,198	561	207	21	11	10	16	176	2	139	1,473	448	375	73	1,716
Mechanical engineering	9,072	2,277	652	102	78	24	207	745	19	552	3,514	1,406	1,251	155	1,875
Metallurgical and materials engineering	2,699	1,031	253	11	6	5	41	385	6	335	789	557	500	57	322
Other engineering	6,786	1,804	415	355	337	18	95	346	88	505	2,324	1,098	927	171	1,560
Women, total science and engineering	114,890	19,768	1,295	8,181	7,544	637	679	3,983	1,137	4,493	50,151	7,449	6,579	870	37,522
Sciences	101,396	16,779	754	7,926	7,316	610	454	2,910	1,070	3,665	44,768	5,779	5,041	738	34,070
Physical sciences	7,564	2,351	173	622	556	66	142	834	14	566	4,265	540	502	38	408
Earth, atmospheric, and ocean sciences	4,312	1,136	103	17	8	9	156	445	25	390	2,021	298	256	42	857
Mathematical sciences	4,132	291	31	44	37	7	5	116	1	94	2,858	137	109	28	846
Computer science	6,381	642	182	22	11	11	22	274	8	134	1,878	365	349	16	3,496
Agricultural sciences	3,807	784	11	8	4	4	17	48	430	270	1,632	558	483	75	833
Biological sciences	23,983	8,036	164	5,989	5,723	266	37	694	450	702	10,470	1,576	1,395	181	3,901
Psychology	24,630	2,045	49	1,004	805	199	24	180	9	779	9,165	958	929	29	12,462
Social sciences	26,587	1,494	41	220	172	48	51	319	133	730	12,479	1,347	1,018	329	11,267

See information and SOURCE at end of table

Appendix table 4-16

Full-time graduate students in science and engineering, by sex, primary source of support, and field: 1999

Page 3 of 3

Field and sex	Total, all sources	Federal support										Institutional support	Other outside support			Self-support
		Total Federal	DOD	HHS			NASA	NSF	USDA	All other Federal			Other outside support, total	All other U.S. support	Foreign support	
				Total HHS	NIH	Other HHS										
Engineering	13,494	2,989	541	255	228	27	225	1,073	67	828		5,383	1,670	1,538	132	3,452
Aerospace engineering	325	98	31	0	0	0	34	14	0	19		140	31	28	3	56
Chemical engineering	1,391	443	29	40	36	4	33	224	11	106		581	213	196	17	154
Civil engineering	3,060	465	26	21	16	5	19	153	11	235		1,398	271	246	25	926
Electrical engineering	3,257	665	230	21	18	3	46	238	1	129		1,210	399	374	25	983
Industrial engineering	1,086	114	29	10	7	3	10	37	0	28		395	116	102	14	461
Mechanical engineering	1,261	319	61	10	9	1	35	141	3	69		523	197	181	16	222
Metallurgical and materials engineering	838	305	67	3	0	3	19	135	6	75		292	145	136	9	96
Other engineering	2,276	580	68	150	142	8	29	131	35	167		844	298	275	23	554

DOD Department of Defense
HHS Department of Health and Human Services
NASA National Aeronautics and Space Administration
NIH National Institutes of Health
NSF National Science Foundation
USDA U.S. Department of Agriculture

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering.

Appendix table 4-17

Types of financial support received by full-time full-year S&E graduate students, by race/ethnicity: 1996

(Percent)

Race/ethnicity	Any aid	Loan	Grant	Research assistantship	Teaching assistantship
Total	82.8	33.4	51.6	15.7	20.3
White, non-Hispanic	87.5	35.6	50.6	13.0	18.6
Asian/Pacific Islander	72.0	21.2	49.9	33.9	41.7
Underrepresented minority[a]	74.1	42.7	62.1	18.7	10.9

[a] Underrepresented minority groups include black, non Hispanic; Hispanic; and American Indian/Alaskan Native.

NOTE: Data are U.S. citizens and permanent residents only.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1995–96 National Postsecondary Student Aid Study.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 4-18

Science and engineering doctorate recipients, by field, sex, and amount of debt: 1995–99

Field	Sex	Number of doctorate recipients	Percent distribution								
			No debt	$5,000 or less	$5,001 to $10,000	$10,001 to 15,000	$15,001 to 20,000	$20,001 to 25,000	$25,001 to 30,000	$30,001 or more	Unknown/ unreported
Science and engineering, total	Male	48,188	40.3	11.0	11.1	8.7	6.3	4.5	3.5	9.7	4.9
	Female	31,056	37.2	10.4	10.2	8.3	6.4	4.9	4.1	13.3	5.3
Physical sciences	Male	8,066	39.9	13.4	13.7	9.8	6.1	4.3	2.8	5.4	4.7
	Female	2,439	40.8	13.6	13.5	10.2	6.6	3.9	2.8	5.0	3.6
Earth, atmospheric, and ocean sciences	Male	1,791	47.0	12.8	11.2	9.1	5.5	4.0	2.4	4.7	3.2
	Female	654	45.3	13.0	12.8	9.3	5.4	3.8	3.2	3.8	3.4
Mathematical sciences	Male	1,973	48.5	10.6	11.9	8.8	5.2	3.2	2.1	5.3	4.4
	Female	716	51.7	11.5	10.9	6.1	4.9	3.4	2.4	4.1	5.2
Computer science	Male	1,753	57.8	9.6	8.3	5.8	3.9	2.5	1.7	5.0	5.4
	Female	468	59.2	10.0	7.1	4.9	2.8	1.9	1.9	6.4	5.8
Agricultural sciences	Male	1,647	40.2	11.8	12.1	8.3	6.2	3.8	4.6	7.5	5.5
	Female	689	41.7	13.1	10.7	7.4	5.8	4.5	2.2	5.7	9.0
Biological sciences	Male	10,086	36.7	12.6	12.5	9.8	6.8	4.6	3.5	9.3	4.1
	Female	8,035	42.1	12.7	12.2	9.2	6.2	4.4	3.0	6.5	3.6
Psychology	Male	5,163	23.5	7.0	8.3	7.4	6.8	6.4	5.9	26.5	8.2
	Female	10,430	27.4	7.1	7.4	7.3	6.8	5.7	5.8	24.4	8.2
Social sciences	Male	6,961	34.3	9.5	10.6	9.9	7.9	5.9	4.7	12.8	4.4
	Female	5,619	36.6	10.1	10.6	9.1	7.0	5.7	4.5	13.0	3.5
Engineering	Male	10,748	50.3	10.7	9.8	7.3	5.3	3.4	2.5	5.9	4.7
	Female	2,006	51.8	12.4	11.3	7.4	4.9	2.5	1.9	4.3	3.4

NOTE: Debt is for undergraduate and/or graduate education expenses including tuition and fees, living expenses and supplies, and transportation costs to and from school

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates

Appendix table 4-19

Science and engineering doctorate recipients, by field, race/ethnicity, and amount of debt: 1995–99

Page 1 of 2

Field and race/ethnicity	Number of doctorate recipients	Percent distribution								
		No debt	$5,000 or less	$5,001 to $10,000	$10,001 to $15,000	$15,001 to $20,000	$20,001 to $25,000	$25,001 to $30,000	$30,001 or more	Unknown/ unreported
Science and engineering, total										
White, non-Hispanic	66,740	40.1	10.9	10.9	8.6	6.3	4.7	3.7	10.8	4.0
Asian/Pacific Islander	4,625	45.7	9.8	10.8	8.3	5.2	3.3	2.9	8.3	5.6
Black, non-Hispanic	2,715	22.5	11.5	11.2	9.6	7.4	5.8	5.9	20.7	5.6
Hispanic	2,872	27.4	10.9	10.5	9.7	8.3	5.2	4.7	15.4	7.9
American Indian/Alaskan Native	456	32.0	11.4	7.5	8.1	5.0	5.3	6.4	16.2	8.1
Physical sciences										
White, non-Hispanic	9,040	40.7	13.6	13.6	10.0	6.3	4.3	2.8	5.3	3.5
Asian/Pacific Islander	655	44.6	12.8	15.6	8.7	4.7	2.6	2.9	3.2	4.9
Black, non-Hispanic	234	22.6	15.4	14.5	9.8	7.3	6.0	6.4	11.5	6.4
Hispanic	269	32.0	13.4	13.4	12.6	8.9	5.2	2.2	6.3	5.9
American Indian/Alaskan Native	43	37.2	11.6	14.0	11.6	2.3	2.3	2.3	4.7	14.0
Earth, atmospheric, and ocean sciences										
White, non-Hispanic	2,216	47.1	13.3	11.6	9.5	5.4	3.8	2.8	4.0	2.5
Asian/Pacific Islander	56	51.8	8.9	12.5	3.6	7.1	5.4	0.0	3.6	7.1
Black, non-Hispanic	28	35.7	10.7	17.9	3.6	7.1	0.0	0.0	17.9	7.1
Hispanic	68	42.6	10.3	13.2	7.4	4.4	4.4	0.0	13.2	4.4
American Indian/Alaskan Native	13	46.2	7.7	0.0	15.4	7.7	15.4	7.7	0.0	0.0
Mathematical sciences										
White, non-Hispanic	2,362	49.9	11.1	11.9	8.3	5.2	3.1	2.0	5.0	3.3
Asian/Pacific Islander	138	55.1	7.2	8.7	7.2	2.9	4.3	2.9	1.4	10.1
Black, non-Hispanic	40	17.5	7.5	12.5	10.0	5.0	10.0	10.0	20.0	7.5
Hispanic	74	43.2	8.1	10.8	6.8	9.5	4.1	1.4	6.8	9.5
American Indian/Alaskan Native	8	62.5	25.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5
Computer science										
White, non-Hispanic	1,812	59.4	9.9	8.1	5.6	3.7	2.5	1.8	4.9	4.3
Asian/Pacific Islander	204	63.7	7.8	8.3	5.4	2.9	1.5	1.0	3.4	5.9
Black, non-Hispanic	53	37.7	7.5	7.5	11.3	3.8	3.8	5.7	13.2	9.4
Hispanic	58	41.4	17.2	5.2	6.9	6.9	3.4	3.4	15.5	0.0
American Indian/Alaskan Native	9	55.6	11.1	11.1	0.0	11.1	11.1	0.0	0.0	0.0

See explanatory information and SOURCE at end of table.

Appendix table 4-19

Science and engineering doctorate recipients, by field, race/ethnicity, and amount of debt: 1995–99

Page 2 of 2

Field and race/ethnicity	Number of doctorate recipients	Percent distribution							
		No debt	$5,000 or less	$5,001 to $10,000	$10,001 to $15,000	$15,001 to $20,000	$20,001 to $25,000	$25,001 to $30,000	$30,001 or more	Unknown/ unreported
Agricultural sciences										
White, non-Hispanic	2,065	41.5	12.5	11.7	8.3	6.2	4.3	3.7	6.6	5.1
Asian/Pacific Islander	65	52.3	7.7	12.3	3.1	3.1	1.5	3.1	4.6	12.3
Black, non-Hispanic	63	17.5	11.1	9.5	9.5	12.7	3.2	6.3	14.3	15.9
Hispanic	68	33.8	11.8	13.2	4.4	5.9	1.5	7.4	16.2	5.9
American Indian/Alaskan Native	24	33.3	12.5	20.8	8.3	0.0	4.2	4.2	8.3	8.3
Biological sciences										
White, non-Hispanic	15,320	39.7	12.7	12.6	9.6	6.6	4.6	3.3	7.7	3.2
Asian/Pacific Islander	1,273	45.8	10.8	10.4	9.3	5.6	3.1	2.8	8.0	4.2
Black, non-Hispanic	482	22.0	16.2	12.7	10.2	6.0	5.2	5.6	16.4	5.8
Hispanic	634	30.4	14.0	13.6	10.9	8.4	6.3	3.2	9.5	3.8
American Indian/Alaskan Native	74	28.4	23.0	6.8	2.7	5.4	6.8	8.1	12.2	6.8
Psychology										
White, non-Hispanic	13,100	27.6	7.1	7.9	7.2	6.6	6.1	5.9	25.0	6.6
Asian/Pacific Islander	464	26.9	5.6	6.7	8.4	7.5	5.4	4.5	27.4	7.5
Black, non-Hispanic	756	18.1	9.3	8.2	8.7	8.7	6.6	5.7	29.2	5.4
Hispanic	853	17.0	6.9	7.3	8.1	8.1	5.0	6.7	25.6	15.4
American Indian/Alaskan Native	117	16.2	7.7	6.0	8.5	6.8	5.1	8.5	28.2	12.8
Social sciences										
White, non-Hispanic	10,571	37.1	9.9	10.7	9.3	7.5	5.9	4.4	12.1	3.2
Asian/Pacific Islander	442	34.2	9.7	10.6	12.4	5.4	5.4	4.5	11.3	6.3
Black, non-Hispanic	703	22.2	8.8	10.7	9.7	7.5	6.1	7.1	23.2	4.7
Hispanic	451	23.1	11.1	10.0	13.7	10.0	5.5	5.3	17.3	4.0
American Indian/Alaskan Native	334	26.3	11.7	8.1	7.5	5.4	6.0	7.2	19.8	8.1
Engineering										
White, non-Hispanic	10,254	51.8	11.1	10.0	7.3	5.2	3.3	2.3	5.4	3.6
Asian/Pacific Islander	1,328	52.3	9.6	10.7	6.9	4.8	2.6	2.4	5.3	5.3
Black, non-Hispanic	356	31.2	13.5	14.3	10.4	5.9	4.8	3.9	11.8	4.2
Hispanic	397	38.3	12.3	11.1	7.3	7.6	4.3	4.8	8.6	5.8
American Indian/Alaskan Native	66	54.5	10.6	1.5	7.6	4.5	1.5	4.5	9.1	6.1

NOTES: Data are for U.S. citizens and permanent residents only. Debt is for undergraduate and/or graduate education expenses including tuition and fees, living expenses and supplies, and transportation costs to and from school.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 4-20

Science and engineering doctorate recipients, by field, disability status, and amount of debt: 1995–99

Field	Disability status	Number of doctorate recipients	Percent distribution								
			No debt	$5,000 or less	$5,001 to $10,000	$10,001 to $15,000	$15,001 to $20,000	$20,001 to $25,000	$25,001 to $30,000	$30,001 or more	Unknown/ unreported
Science and engineering, total	Without disabilities	77,984	39.1	10.8	10.8	8.6	6.3	4.6	3.7	10.9	5.1
	With disabilities	1,284	37.4	9.4	7.9	8.2	6.5	4.9	5.3	19.4	1.0
Physical sciences	Without disabilities	10,400	40.0	13.5	13.7	9.9	6.2	4.2	2.8	5.3	4.5
	With disabilities	107	42.1	14.0	3.7	8.4	12.1	6.5	5.6	6.5	0.9
Earth, atmospheric, and ocean sciences	Without disabilities	2,411	46.6	12.8	11.7	9.1	5.4	4.0	2.6	4.5	3.3
	With disabilities	41	34.1	12.2	12.2	12.2	4.9	2.4	4.9	17.1	0.0
Mathematical sciences	Without disabilities	2,652	49.5	10.7	11.6	8.1	5.2	3.3	2.1	4.9	4.6
	With disabilities	37	40.5	16.2	13.5	8.1	0.0	2.7	5.4	10.8	2.7
Computer science	Without disabilities	2,176	58.5	9.5	8.0	5.7	3.7	2.4	1.7	5.0	5.6
	With disabilities	46	39.1	19.6	13.0	4.3	0.0	2.2	2.2	17.4	2.2
Agricultural sciences	Without disabilities	2,296	40.7	12.2	11.6	8.0	6.1	3.9	3.9	6.8	6.7
	With disabilities	41	36.6	7.3	14.6	9.8	7.3	7.3	2.4	14.6	0.0
Biological sciences	Without disabilities	17,902	39.1	12.7	12.4	9.6	6.5	4.5	3.3	8.0	3.9
	With disabilities	222	38.7	10.4	12.2	8.1	8.1	4.1	4.5	12.2	1.8
Psychology	Without disabilities	15,226	26.0	7.1	7.7	7.3	6.8	5.9	5.8	24.9	8.5
	With disabilities	379	27.7	5.5	5.8	7.7	6.3	6.6	6.1	33.5	0.8
Social sciences	Without disabilities	12,303	35.2	9.8	10.6	9.5	7.5	5.9	4.6	12.7	4.1
	With disabilities	279	40.9	6.5	8.2	8.6	5.7	3.2	5.0	20.8	1.1
Engineering	Without disabilities	12,618	50.5	10.9	10.1	7.3	5.3	3.2	2.4	5.6	4.6
	With disabilities	138	49.3	15.2	2.9	8.0	5.1	5.1	6.5	8.0	0.0

NOTE: Debt is for undergraduate and/or graduate education expenses including tuition and fees, living expenses and supplies, and transportation costs to and from school.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 4-21

Graduate degree attainment and enrollment status of 1992–93 bachelor's degree recipients who enrolled in S&E graduate programs, by sex, race/ethnicity, and disability status: 1997

Sex, race/ethnicity, and disability status	Degree attainment and enrollment as of 1997							
	No graduate degree				Attained graduate degree			
	Not enrolled		Enrolled		Not enrolled		Enrolled	
Total	30.3	(1.9)	27.9	(1.9)	34.4	(1.9)	7.5	(1.1)
Male	30.9	(2.5)	28.2	(2.4)	32.3	(2.5)	8.5	(1.5)
Female	29.6	(2.9)	26.9	(3.1)	37.3	(3.2)	6.2	(1.4)
White, non-Hispanic	28.4	(2.1)	29.1	(2.2)	34.8	(2.2)	7.8	(1.2)
Asian/Pacific Islander	24.9	(6.1)	32.9	(7.1)	28.3	(7.6)	13.9	(5.2)
Underrepresented minority[a]	44.1	(6.6)	18.0	(4.1)	34.3	(6.2)	3.7	(1.9)
Without disabilities	28.9	(1.9)	28.3	(2.0)	35.1	(2.0)	7.7	(1.1)
With disabilities	58.0	(10.9)	18.8	(8.0)	19.1	(7.8)	4.2	(3.0)

[a] Underrepresented minority groups include black, non-Hispanic; Hispanic; and American Indian/Alaskan Native.

NOTES: Standard errors are in parentheses. Details may not add to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Baccalaureate and Beyond Second Followup.

Appendix table 5-1

Master's degrees awarded, by field: 1990–98

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Total, all fields	324,947	338,498	354,207	370,973	389,008	399,428	408,932	420,954	431,871
Total science and engineering	77,788	78,368	81,107	86,425	91,411	94,309	95,313	93,485	93,918
Physical sciences	3,805	3,777	3,922	3,965	4,263	4,241	4,364	4,141	3,969
Astronomy	105	98	113	135	129	119	115	93	101
Chemistry	1,711	1,676	1,791	1,853	2,010	2,105	2,273	2,268	2,173
Physics	1,819	1,725	1,834	1,781	1,952	1,826	1,686	1,497	1,401
Other physical sciences	170	278	184	196	172	191	290	283	294
Earth, atmospheric, and ocean sciences	1,596	1,499	1,425	1,397	1,418	1,483	1,487	1,435	1,426
Atmospheric sciences	198	172	180	202	197	203	199	177	199
Earth sciences	1,316	1,195	1,102	1,052	1,073	1,142	1,146	1,145	1,105
Oceanography	82	132	143	143	148	138	142	113	122
Mathematics	3,684	3,632	3,665	3,751	3,804	3,932	3,742	3,599	3,525
Computer science	9,643	9,324	9,655	10,349	10,546	10,563	10,613	10,489	11,752
Agricultural sciences	2,634	2,600	3,037	3,272	3,410	3,574	4,021	3,927	3,862
Biological sciences	4,893	4,806	4,848	4,840	5,276	5,495	6,286	6,594	6,368
Psychology	9,308	9,802	9,852	10,412	11,572	13,132	13,043	13,633	13,146
Social sciences	18,230	18,915	19,685	20,775	22,405	23,259	23,996	23,793	23,732
Economics	2,456	2,411	2,564	2,725	2,989	2,838	2,964	2,804	2,843
Political science and public administration	9,941	10,392	10,767	11,310	12,041	12,802	13,370	13,368	13,151
Sociology	1,213	1,293	1,379	1,564	1,675	1,790	1,822	1,752	1,774
Anthropology	827	851	913	927	989	1,053	1,051	1,111	1,098
Linguistics	601	606	586	610	650	603	601	642	568
History of science	0	0	3	9	16	13	10	18	22
Area and ethnic studies	1,205	1,262	1,374	1,501	1,597	1,584	1,657	1,587	1,550
Other social sciences	1,987	2,100	2,099	2,129	2,448	2,576	2,521	2,511	2,726
Engineering	23,995	24,013	25,018	27,664	28,717	28,630	27,761	25,874	26,138
Aerospace engineering	1,029	941	933	1,047	1,038	821	774	625	584
Chemical engineering	1,205	1,025	1,145	1,220	1,287	1,369	1,416	1,345	1,372
Civil engineering	3,213	3,404	3,755	4,438	4,918	5,168	5,002	4,880	4,736
Electrical engineering	8,009	7,942	8,274	8,828	8,870	8,743	8,156	7,341	7,971
Industrial engineering	1,834	2,039	2,370	2,745	2,882	2,873	3,027	2,935	3,109
Materials engineering	802	787	796	849	910	852	774	724	698
Mechanical engineering	3,630	3,680	3,826	4,169	4,277	4,368	4,009	3,756	3,551
Other engineering	4,273	4,195	3,919	4,368	4,535	4,436	4,603	4,268	4,117
Non-S&E	247,159	260,130	273,100	284,548	297,597	305,119	313,619	327,469	337,953

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 5-2

Master's degrees awarded to women, by field: 1990–98

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	Percent awarded to women	
										1990	1998
Total, all fields	170,922	181,603	191,908	201,220	212,246	220,230	228,572	239,497	246,810	52.6	57.1
Total science and engineering	26,558	27,927	28,950	30,971	33,441	35,791	37,453	38,262	38,583	34.1	41.1
Physical sciences	1,051	1,074	1,088	1,171	1,233	1,283	1,450	1,333	1,440	27.6	36.3
Astronomy	22	19	32	29	31	31	27	32	30	21.0	29.7
Chemistry	673	683	701	743	827	885	998	927	998	39.3	45.9
Physics	296	284	295	318	297	291	301	255	255	16.3	18.2
Other physical sciences	60	88	60	81	78	76	124	119	157	35.3	53.4
Earth, atmospheric, and ocean sciences	378	383	368	391	424	451	436	487	494	23.7	34.6
Atmospheric sciences	24	34	33	41	47	51	35	42	52	12.1	26.1
Earth sciences	325	308	297	296	328	353	347	393	397	24.7	35.9
Oceanography	29	41	38	54	49	47	54	52	45	35.4	36.9
Mathematical sciences	1,476	1,486	1,446	1,532	1,493	1,579	1,506	1,489	1,470	40.1	41.7
Computer science	2,675	2,761	2,675	2,795	2,729	2,786	2,850	2,979	3,414	27.7	29.1
Agricultural sciences	947	940	1,128	1,265	1,391	1,471	1,707	1,695	1,709	36.0	44.3
Biological sciences	2,500	2,491	2,530	2,466	2,780	2,858	3,341	3,518	3,354	51.1	52.7
Psychology	6,283	6,808	6,923	7,484	8,285	9,397	9,373	9,918	9,540	67.5	72.6
Social sciences	7,979	8,627	9,123	9,773	10,683	11,334	12,038	12,148	11,999	43.8	50.6
Economics	625	700	712	816	959	894	1,002	953	944	25.4	33.2
Political science and public administration	4,278	4,640	4,933	5,241	5,624	6,124	6,654	6,691	6,566	43.0	49.9
Sociology	712	779	818	960	1,023	1,112	1,180	1,142	1,118	58.7	63.0
Anthropology	481	501	565	534	610	668	631	712	686	58.2	62.5
Linguistics	378	388	380	392	418	416	393	418	389	62.9	68.5
History of science	0	0	1	4	7	4	4	7	7	0.0	31.8
Area and ethnic studies	547	623	682	761	819	818	856	845	842	45.4	54.3
Other social sciences	958	996	1,032	1,065	1,223	1,298	1,318	1,380	1,447	48.2	53.1
Engineering	3,269	3,357	3,669	4,094	4,423	4,632	4,752	4,695	5,163	13.6	19.8
Aerospace engineering	82	86	83	106	100	99	92	75	81	8.0	13.9
Chemical engineering	192	173	231	224	279	306	306	332	344	15.9	25.1
Civil engineering	520	540	635	831	953	1,045	1,064	1,099	1,154	16.2	24.4
Electrical engineering	991	934	1,045	1,051	1,149	1,204	1,196	1,144	1,376	12.4	17.3
Industrial engineering	341	436	472	555	536	512	624	604	676	18.6	21.7
Materials engineering	152	180	143	167	187	184	175	174	170	19.0	24.4
Mechanical engineering	354	360	371	400	417	450	454	419	461	9.8	13.0
Other engineering	637	648	689	760	802	832	841	848	901	14.9	21.9
Non-S&E	144,364	153,676	162,958	170,249	178,805	184,439	191,119	201,235	208,227	58.4	61.6

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 5-3

Master's degrees awarded in science and engineering, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	Percent of all master's degrees awarded to U.S. citizens and permanent residents	
										1990	1998
All recipients, all fields	324,947	338,498	354,207	370,973	389,008	399,428	408,932	420,954	431,871	na	na
Total science and engineering	72,228	72,828	76,184	81,415	86,080	88,431	88,730	86,697	87,144	na	na
Physical sciences[a]	5,411	5,282	5,352	5,365	5,688	5,735	5,854	5,579	5,398	na	na
Mathematical sciences	3,684	3,632	4,019	4,084	4,108	4,190	4,037	3,790	3,700	na	na
Computer science	9,643	9,324	9,530	10,167	10,421	10,332	10,223	10,107	11,270	na	na
Agricultural sciences	2,662	2,625	3,058	3,299	3,435	3,612	4,032	3,946	3,881	na	na
Biological sciences	4,893	4,806	4,816	4,798	5,217	5,423	6,207	6,497	6,283	na	na
Psychology	9,308	9,802	10,280	11,020	12,274	14,021	13,862	14,442	13,910	na	na
Social sciences	12,642	13,350	14,119	15,024	16,230	16,501	16,758	16,466	16,574	na	na
Engineering	23,985	24,007	25,010	27,658	28,707	28,617	27,757	25,870	26,128	na	na
Non S&E	252,719	265,670	278,023	289,558	302,928	310,997	320,202	334,257	344,727	na	na
U.S. citizens and permanent residents, all fields	290,345	300,887	314,555	326,864	342,502	350,672	360,682	371,477	379,666	100.0	100.0
Total science and engineering	55,890	55,779	58,177	61,265	65,201	67,110	68,151	66,609	65,748	100.0	100.0
Physical sciences[a]	4,047	3,778	3,814	3,763	3,918	3,980	4,119	3,933	3,898	100.0	100.0
Mathematical sciences	2,649	2,573	2,907	2,946	3,013	3,034	2,956	2,789	2,671	100.0	100.0
Computer science	7,080	6,505	6,361	6,388	6,509	6,452	6,352	6,172	6,523	100.0	100.0
Agricultural sciences	2,023	2,022	2,356	2,605	2,727	2,948	3,371	3,281	3,274	100.0	100.0
Biological sciences	4,164	4,057	4,021	3,949	4,284	4,543	5,230	5,589	5,392	100.0	100.0
Psychology	8,923	9,485	9,978	10,688	11,913	13,537	13,423	14,025	13,441	100.0	100.0
Social sciences	10,258	10,872	11,629	12,387	13,487	13,695	13,938	13,584	13,579	100.0	100.0
Engineering	16,746	16,487	17,111	18,539	19,350	18,921	18,762	17,236	16,970	100.0	100.0
Non S&E	234,455	245,108	256,378	265,599	277,301	283,562	292,531	304,868	313,918	100.0	100.0
Whites, non-Hispanic, all fields	236,874	247,524	257,062	265,668	273,913	277,437	282,713	288,353	291,962	81.6	76.9
Total science and engineering	44,450	44,513	45,649	47,975	50,711	51,417	51,791	50,288	49,047	79.5	74.6
Physical sciences[a]	3,401	3,129	3,067	3,078	3,145	3,179	3,326	3,173	3,129	84.0	80.3
Mathematical sciences	2,169	2,068	2,336	2,354	2,379	2,342	2,227	2,145	2,036	81.9	76.2
Computer science	4,851	4,637	4,407	4,464	4,286	4,205	4,113	3,868	3,976	68.5	61.0
Agricultural sciences	1,820	1,818	2,075	2,282	2,261	2,474	2,926	2,819	2,837	90.0	86.7
Biological sciences	3,501	3,353	3,251	3,144	3,453	3,589	4,080	4,342	4,156	84.1	77.1
Psychology	7,489	7,973	8,238	8,810	9,960	11,107	10,739	11,101	10,421	83.9	77.5
Social sciences	8,360	8,900	9,523	9,923	10,758	10,700	10,807	10,350	10,413	81.5	76.7
Engineering	12,859	12,635	12,752	13,920	14,469	13,821	13,573	12,490	12,079	76.8	71.2
Non S&E	192,424	203,011	211,413	217,693	223,202	226,020	230,922	238,065	242,915	82.1	77.4

See explanatory information and SOURCE at end of table.

Appendix table 5-3

Master's degrees awarded in science and engineering, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	Percent of all master's degrees awarded to U.S. citizens and permanent residents	
										1990	1998
Asians/Pacific Islanders, all fields	9,994	11,070	12,293	13,169	14,559	15,906	17,281	17,912	19,936	3.4	5.3
Total science and engineering	4,055	4,310	4,763	4,846	5,422	5,683	5,942	5,845	6,178	7.3	9.4
Physical sciences[a]	1,863	2,008	2,223	2,260	2,443	2,572	2,621	2,319	2,450	11.1	14.4
Mathematical sciences	234	251	295	249	284	288	304	308	278	5.8	7.1
Computer science	184	189	201	197	233	239	235	248	215	6.9	8.0
Agricultural sciences	941	1,014	1,105	1,106	1,228	1,239	1,237	1,268	1,527	13.3	23.4
Biological sciences	45	50	51	61	82	97	110	105	83	2.2	2.5
Psychology	225	231	264	305	332	417	519	558	576	5.4	10.7
Social sciences	159	170	183	191	270	298	330	374	394	1.8	2.9
Engineering	404	397	441	477	550	533	586	665	655	3.9	4.8
Non-S&E	5,939	6,760	7,530	8,323	9,137	10,223	11,339	12,067	13,758	2.5	4.4
Blacks, non-Hispanic, all fields	14,473	15,857	17,420	18,897	20,936	22,954	24,588	26,948	28,616	5.0	7.5
Total science and engineering	1,847	2,090	2,356	2,554	2,849	3,339	3,518	3,817	3,756	3.3	5.7
Physical sciences[a]	462	594	660	730	803	930	965	1,010	1,012	4.5	7.5
Mathematical sciences	87	73	98	105	127	147	116	144	146	2.1	3.7
Computer science	70	100	77	98	109	151	151	157	150	2.6	5.6
Agricultural sciences	232	283	316	308	365	347	379	377	376	3.3	5.8
Biological sciences	28	51	59	70	78	74	88	96	95	1.4	2.9
Psychology	110	137	149	135	142	162	198	236	190	2.6	3.5
Social sciences	471	454	531	544	636	863	947	1,123	1,073	5.3	8.0
Engineering	387	398	466	564	589	665	674	674	714	2.3	4.2
Non-S&E	12,626	13,767	15,064	16,343	18,087	19,615	21,070	23,131	24,860	5.4	7.9
Hispanics, all fields	8,495	9,684	10,256	11,371	13,177	13,905	15,394	16,360	17,416	2.9	4.6
Total science and engineering	1,587	1,736	1,806	2,092	2,514	2,585	2,730	2,882	3,071	2.8	4.7
Physical sciences[a]	98	96	93	114	114	129	127	139	149	2.4	3.8
Mathematical sciences	51	85	66	78	75	75	91	71	91	1.9	3.4
Computer science	118	128	149	162	169	198	173	197	193	1.7	3.0
Agricultural sciences	44	49	49	69	184	96	95	105	116	2.2	3.5
Biological sciences	120	136	146	151	138	167	191	208	188	2.9	3.5
Psychology	369	391	419	463	558	656	709	771	851	4.1	6.3
Social sciences	341	383	396	474	557	553	596	626	676	3.3	5.0
Engineering	446	468	488	581	719	711	748	765	807	2.7	4.8
Non-S&E	6,908	7,948	8,450	9,279	10,663	11,320	12,664	13,478	14,345	2.9	4.6

See explanatory information and SOURCE at end of table.

Appendix table 5-3

Master's degrees awarded in science and engineering, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	Percent of all master's degrees awarded to U.S. citizens and permanent residents	
										1990	1998
American Indians/Alaskan Natives, all fields	1,050	1,125	1,228	1,344	1,618	1,542	1,693	1,844	1,951	0.4	0.5
Total science and engineering	181	200	198	253	273	299	304	332	349	0.3	0.5
Physical sciences[a]	9	13	18	12	16	19	10	16	24	0.2	0.6
Mathematical sciences	6	9	4	8	6	11	6	14	11	0.2	0.4
Computer science	7	14	15	14	18	16	24	25	14	0.1	0.2
Agricultural sciences	8	8	7	8	11	13	14	18	23	0.4	0.7
Biological sciences	14	13	12	26	17	20	17	23	21	0.3	0.4
Psychology	37	49	38	57	62	85	80	100	112	0.4	0.8
Social sciences	65	54	62	78	83	92	97	83	90	0.6	0.7
Engineering	35	40	42	50	60	43	56	53	54	0.2	0.3
Non-S&E	869	925	1,030	1,091	1,345	1,243	1,389	1,512	1,602	0.4	0.5
Unknown race/ethnicity, all fields	19,459	15,627	16,296	16,415	18,299	18,928	19,013	20,060	19,785	6.7	5.2
Total science and engineering	3,770	2,930	3,405	3,545	3,432	3,787	3,866	3,445	3,347	6.7	5.1
Physical sciences[a]	218	216	243	205	232	218	236	153	172	5.4	4.4
Mathematical sciences	169	122	223	211	211	216	246	154	168	6.4	6.3
Computer science	931	429	369	334	443	447	426	437	437	13.1	6.7
Agricultural sciences	78	46	115	115	111	194	138	138	120	3.9	3.7
Biological sciences	194	187	199	188	202	188	225	222	261	4.7	4.8
Psychology	398	448	569	623	427	528	618	556	590	4.5	4.4
Social sciences	626	544	547	705	736	887	887	850	733	6.1	5.4
Engineering	1,156	938	1,140	1,164	1,070	1,109	1,090	935	866	6.9	5.1
Non-S&E	15,689	12,697	12,891	12,870	14,867	15,141	15,147	16,615	16,438	6.7	5.2
Temporary residents, all fields	34,602	37,611	39,652	44,109	46,506	48,756	48,250	49,477	52,205	na	na
Total science and engineering	16,338	17,049	18,007	20,150	20,879	21,321	20,579	20,088	21,396	na	na
Physical sciences[a]	1,364	1,504	1,538	1,602	1,770	1,755	1,735	1,646	1,500	na	na
Mathematical sciences	1,035	1,059	1,112	1,138	1,095	1,156	1,081	1,001	1,029	na	na
Computer science	2,563	2,819	3,169	3,779	3,912	3,880	3,871	3,935	4,747	na	na
Agricultural sciences	639	603	702	694	708	664	661	665	607	na	na
Biological sciences	729	749	795	849	933	880	977	908	891	na	na
Psychology	385	317	302	332	361	484	439	417	469	na	na
Social sciences	2,384	2,478	2,490	2,637	2,743	2,806	2,820	2,882	2,995	na	na
Engineering	7,239	7,520	7,899	9,119	9,357	9,696	8,995	8,634	9,158	na	na
Non-S&E	18,264	20,562	21,645	23,959	25,627	27,435	27,671	29,389	30,809	na	na

na not applicable

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 5-4

Master's degrees in science and engineering awarded to women, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
All recipients, all fields	170,922	181,603	191,908	201,220	212,246	220,230	228,572	239,497	246,810
Total science and engineering	23,804	25,080	26,416	28,313	30,619	32,628	33,802	34,516	34,925
Physical sciences[a]	1,430	1,457	1,457	1,562	1,658	1,735	1,886	1,821	1,934
Mathematical sciences	1,476	1,486	1,582	1,616	1,567	1,641	1,569	1,545	1,493
Computer science	2,675	2,761	2,646	2,756	2,694	2,702	2,723	2,855	3,270
Agricultural sciences	954	944	1,130	1,270	1,395	1,481	1,708	1,698	1,712
Biological sciences	2,500	2,491	2,500	2,433	2,742	2,807	3,282	3,449	3,289
Psychology	6,283	6,808	7,276	7,979	8,857	10,111	10,034	10,573	10,175
Social sciences	5,218	5,776	6,180	6,605	7,285	7,520	7,848	7,881	7,894
Engineering	3,268	3,357	3,685	4,093	4,421	4,631	4,752	4,694	5,158
Non-S&E	147,118	156,523	165,492	172,907	181,627	187,602	194,770	204,981	211,885
U.S. citizens and permanent residents, all fields	160,019	169,142	178,493	185,932	195,881	202,633	210,372	220,221	226,085
Total science and engineering	20,168	21,112	22,114	23,528	25,501	27,326	28,183	28,814	28,584
Physical sciences[a]	1,094	1,023	1,030	1,078	1,124	1,202	1,338	1,315	1,415
Mathematical sciences	1,090	1,110	1,162	1,229	1,210	1,269	1,198	1,207	1,129
Computer science	2,045	2,086	1,857	1,788	1,730	1,727	1,739	1,756	1,895
Agricultural sciences	765	765	927	1,062	1,131	1,246	1,448	1,450	1,468
Biological sciences	2,150	2,112	2,090	1,980	2,271	2,379	2,760	2,951	2,790
Psychology	6,034	6,595	7,069	7,757	8,626	9,775	9,719	10,283	9,822
Social sciences	4,418	4,911	5,218	5,627	6,199	6,431	6,621	6,606	6,630
Engineering	2,572	2,510	2,761	2,987	3,210	3,297	3,360	3,246	3,435
Non-S&E	139,851	148,030	156,379	162,404	170,380	175,307	182,189	191,407	197,501
Whites, non-Hispanic, all fields	130,799	139,607	146,265	151,951	157,155	160,782	165,154	170,411	173,498
Total science and engineering	16,200	16,879	17,536	18,482	19,865	20,953	21,200	21,358	20,981
Physical sciences[a]	883	830	833	849	893	923	1,038	1,001	1,085
Mathematical sciences	894	899	947	1,022	959	988	901	906	835
Computer science	1,377	1,377	1,171	1,138	977	974	943	890	936
Agricultural sciences	682	684	825	925	921	1,024	1,239	1,212	1,253
Biological sciences	1,790	1,724	1,685	1,551	1,810	1,849	2,122	2,234	2,148
Psychology	5,058	5,553	5,851	6,384	7,190	8,005	7,718	8,088	7,551
Social sciences	3,579	3,919	4,247	4,470	4,878	4,950	5,049	4,922	4,956
Engineering	1,937	1,893	1,977	2,143	2,237	2,240	2,190	2,105	2,217
Non-S&E	114,599	122,728	128,729	133,469	137,290	139,829	143,954	149,053	152,517
Asians/Pacific Islanders, all fields	4,324	4,850	5,470	6,044	6,768	7,521	8,404	9,327	10,298
Total science and engineering	1,256	1,351	1,487	1,609	1,861	1,950	2,216	2,392	2,471
Physical sciences[a]	94	86	89	99	102	101	136	140	128
Mathematical sciences	78	81	98	76	107	105	103	123	104
Computer science	332	387	400	396	443	454	462	513	618
Agricultural sciences	21	23	21	29	47	53	61	73	40
Biological sciences	128	127	139	169	181	208	282	314	286
Psychology	117	123	121	141	196	219	252	288	301
Social sciences	180	201	212	258	274	261	299	380	367
Engineering	306	323	407	441	511	549	621	561	627
Non-S&E	3,068	3,499	3,983	4,435	4,907	5,571	6,188	6,935	7,827

See explanatory information and SOURCE at end of table.

Appendix table 5-4

Master's degrees in science and engineering awarded to women, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Blacks, non-Hispanic, all fields	9,304	10,238	11,626	12,425	13,929	15,318	16,590	18,504	19,509
Total science and engineering	897	1,062	1,190	1,301	1,473	1,805	1,953	2,200	2,110
Physical sciences[a]	26	30	32	47	53	61	57	70	65
Mathematical sciences	33	47	33	50	47	87	73	80	79
Computer science	92	133	141	115	160	148	174	169	147
Agricultural sciences	10	17	23	30	32	39	39	40	59
Biological sciences	59	79	88	88	94	112	122	167	122
Psychology	338	325	394	429	475	645	704	865	813
Social sciences	239	332	345	385	445	512	574	584	581
Engineering	100	99	134	157	167	201	210	225	244
Non S&E	8,407	9,176	10,436	11,124	12,456	13,513	14,637	16,304	17,399
Hispanics, all fields	4,782	5,560	5,875	6,496	7,694	8,180	9,322	9,894	10,568
Total science and engineering	628	744	740	837	1,087	1,127	1,252	1,306	1,475
Physical sciences[a]	35	23	29	38	34	41	47	53	62
Mathematical sciences	18	33	19	28	31	22	34	21	40
Computer science	25	44	51	58	49	47	48	56	70
Agricultural sciences	19	18	18	34	79	40	40	54	58
Biological sciences	59	82	77	75	73	92	106	101	92
Psychology	236	267	288	311	417	482	533	563	632
Social sciences	163	187	178	192	267	270	276	282	343
Engineering	73	90	80	101	137	133	168	176	178
Non-S&E	4,154	4,816	5,135	5,659	6,607	7,053	8,070	8,588	9,093
American Indians/Alaskan Natives, all fields	611	661	727	788	964	919	1,028	1,147	1,212
Total science and engineering	85	91	90	124	112	148	150	155	173
Physical sciences[a]	3	5	4	4	3	8	4	5	11
Mathematical sciences	2	2	3	4	1	6	1	6	7
Computer science	2	4	5	3	6	5	7	9	3
Agricultural sciences	3	5	2	3	3	3	8	8	8
Biological sciences	6	9	5	17	5	9	8	12	12
Psychology	24	30	25	47	43	55	58	64	76
Social sciences	37	30	39	33	39	59	59	44	48
Engineering	8	6	7	13	12	3	5	7	8
Non-S&E	526	570	637	664	852	771	878	992	1,039
Unknown race/ethnicity, all fields	10,199	8,226	8,530	8,228	9,371	9,913	9,874	10,938	11,000
Total science and engineering	1,102	985	1,071	1,175	1,103	1,343	1,412	1,403	1,374
Physical sciences[a]	53	49	43	41	39	68	56	46	64
Mathematical sciences	65	48	62	49	65	61	86	71	64
Computer science	217	141	89	78	95	99	105	119	121
Agricultural sciences	30	18	38	41	49	87	61	63	50
Biological sciences	108	91	96	90	108	109	120	123	130
Psychology	261	297	390	445	305	369	454	415	449
Social sciences	220	242	197	289	296	379	364	394	335
Engineering	148	99	156	142	146	171	166	172	161
Non-S&E	9,097	7,241	7,459	7,053	8,268	8,570	8,462	9,535	9,626

See explanatory information and SOURCE at end of table

Appendix table 5-4

Master's degrees in science and engineering awarded to women, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Temporary residents, all fields	10,903	12,461	13,415	15,288	16,365	17,597	18,200	19,276	20,725
Total science and engineering	3,636	3,968	4,302	4,785	5,118	5,302	5,619	5,702	6,341
Physical sciences[a]	336	434	427	484	534	533	548	506	519
Mathematical sciences	386	376	400	387	357	372	371	338	364
Computer science	630	675	789	968	964	975	984	1,099	1,375
Agricultural sciences	189	179	203	208	264	235	260	248	244
Biological sciences	350	379	410	443	471	428	522	498	499
Psychology	249	213	207	221	231	336	315	290	353
Social sciences	800	865	962	978	1,086	1,089	1,227	1,275	1,264
Engineering	696	847	904	1,096	1,211	1,334	1,392	1,448	1,723
Non-S&E	7,267	8,493	9,113	10,503	11,247	12,295	12,581	13,574	14,384

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics, data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-5

Master's degrees in science and engineering awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
All recipients, all fields	154,025	156,895	162,299	169,753	176,762	179,198	180,360	181,457	185,061
Total science and engineering	48,424	47,748	49,768	53,102	55,461	55,803	54,928	52,181	52,219
Physical sciences[a]	3,981	3,825	3,895	3,803	4,030	4,000	3,968	3,758	3,464
Mathematical sciences	2,208	2,146	2,457	2,468	2,541	2,549	2,468	2,245	2,207
Computer science	6,968	6,563	6,884	7,411	7,727	7,630	7,500	7,252	8,000
Agricultural sciences	1,708	1,681	1,928	2,029	2,040	2,131	2,324	2,248	2,169
Biological sciences	2,393	2,315	2,316	2,365	2,475	2,616	2,925	3,048	2,994
Psychology	3,025	2,994	3,004	3,042	3,417	3,910	3,828	3,869	3,735
Social sciences	7,424	7,574	7,939	8,419	8,945	8,981	8,910	8,585	8,680
Engineering	20,717	20,650	21,345	23,565	24,286	23,986	23,005	21,176	20,970
Non-S&E	105,601	109,147	112,531	116,651	121,301	123,395	125,432	129,276	132,842
U.S. citizens and permanent residents, all fields	130,326	131,745	136,062	140,932	146,621	148,039	150,310	151,256	153,581
Total science and engineering	35,722	34,667	36,063	37,737	39,700	39,784	39,968	37,795	37,164
Physical sciences[a]	2,953	2,755	2,784	2,685	2,794	2,778	2,781	2,618	2,483
Mathematical sciences	1,559	1,463	1,745	1,717	1,803	1,765	1,758	1,582	1,542
Computer science	5,035	4,419	4,504	4,600	4,779	4,725	4,613	4,416	4,628
Agricultural sciences	1,258	1,257	1,429	1,543	1,596	1,702	1,923	1,831	1,806
Biological sciences	2,014	1,945	1,931	1,959	2,013	2,164	2,470	2,638	2,602
Psychology	2,889	2,890	2,909	2,931	3,287	3,762	3,704	3,742	3,619
Social sciences	5,840	5,961	6,411	6,760	7,288	7,264	7,317	6,978	6,949
Engineering	14,174	13,977	14,350	15,542	16,140	15,624	15,402	13,990	13,535
Non-S&E	94,604	97,078	99,999	103,195	106,921	108,255	110,342	113,461	116,417
Whites, non-Hispanic, all fields	106,075	107,917	110,797	113,717	116,758	116,655	117,559	117,942	118,464
Total science and engineering	28,250	27,634	28,113	29,493	30,846	30,464	30,591	28,930	28,066
Physical sciences[a]	2,518	2,299	2,234	2,229	2,252	2,256	2,288	2,172	2,044
Mathematical sciences	1,275	1,169	1,389	1,332	1,420	1,354	1,326	1,239	1,201
Computer science	3,474	3,260	3,236	3,326	3,309	3,231	3,170	2,978	3,040
Agricultural sciences	1,138	1,134	1,250	1,357	1,340	1,450	1,687	1,607	1,584
Biological sciences	1,711	1,629	1,566	1,593	1,643	1,740	1,958	2,108	2,008
Psychology	2,431	2,420	2,387	2,426	2,770	3,102	3,021	3,013	2,870
Social sciences	4,781	4,981	5,276	5,453	5,880	5,750	5,758	5,428	5,457
Engineering	10,922	10,742	10,775	11,777	12,232	11,581	11,383	10,385	9,862
Non-S&E	77,825	80,283	82,684	84,224	85,912	86,191	86,968	89,012	90,398
Asians/Pacific Islanders, all fields	5,670	6,220	6,823	7,125	7,791	8,385	8,877	8,585	9,638
Total science and engineering	2,799	2,959	3,276	3,237	3,561	3,733	3,726	3,453	3,707
Physical sciences[a]	140	165	206	150	182	187	168	168	150
Mathematical sciences	106	108	103	121	126	134	132	125	111
Computer science	609	627	705	710	785	785	775	755	909
Agricultural sciences	24	27	30	32	35	44	49	32	43
Biological sciences	97	104	125	136	151	209	237	244	290
Psychology	42	47	62	50	74	79	78	86	93
Social sciences	224	196	229	219	276	272	287	285	288
Engineering	1,557	1,685	1,816	1,819	1,932	2,023	2,000	1,758	1,823
Non-S&E	2,871	3,261	3,547	3,888	4,230	4,652	5,151	5,132	5,931

See explanatory information and SOURCE at end of table.

Appendix table 5-5

Master's degrees in science and engineering awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Blacks, non-Hispanic, all fields	5,169	5,619	5,794	6,472	7,007	7,636	7,998	8,444	9,107
Total science and engineering	950	1,028	1,166	1,253	1,376	1,534	1,565	1,617	1,646
Physical sciences[a]	61	43	66	58	74	86	59	74	81
Mathematical sciences	37	53	44	48	62	64	78	77	71
Computer science	140	150	175	193	205	199	205	208	229
Agricultural sciences	18	34	36	40	46	35	49	56	36
Biological sciences	51	58	61	47	48	50	76	69	68
Psychology	133	129	137	115	161	218	243	258	260
Social sciences	223	262	315	345	358	418	391	426	431
Engineering	287	299	332	407	422	464	464	449	470
Non-S&E	4,219	4,591	4,628	5,219	5,631	6,102	6,433	6,827	7,461
Hispanics, all fields	3,713	4,124	4,381	4,875	5,483	5,725	6,072	6,466	6,848
Total science and engineering	959	992	1,066	1,255	1,427	1,458	1,478	1,576	1,596
Physical sciences[a]	63	73	64	76	80	88	80	86	87
Mathematical sciences	33	52	47	50	44	53	57	50	51
Computer science	93	84	98	104	120	151	125	141	123
Agricultural sciences	25	31	31	35	105	56	55	51	58
Biological sciences	61	54	69	76	65	75	85	107	96
Psychology	133	124	131	152	141	174	176	208	219
Social sciences	178	196	218	282	290	283	320	344	333
Engineering	373	378	408	480	582	578	580	589	629
Non-S&E	2,754	3,132	3,315	3,620	4,056	4,267	4,594	4,890	5,252
American Indians/Alaskan Natives, all fields	439	464	501	556	654	623	665	697	739
Total science and engineering	96	109	108	129	161	151	154	177	176
Physical sciences[a]	6	8	14	8	13	11	6	11	13
Mathematical sciences	4	7	1	4	5	5	5	8	4
Computer science	5	10	10	11	12	11	17	16	11
Agricultural sciences	5	3	5	5	8	10	6	10	15
Biological sciences	8	4	7	9	12	11	9	11	9
Psychology	13	19	13	10	19	30	22	36	36
Social sciences	28	24	23	45	44	33	38	39	42
Engineering	27	34	35	37	48	40	51	46	46
Non-S&E	343	355	393	427	493	472	511	520	563
Unknown race/ethnicity, all fields	9,260	7,401	7,766	8,187	8,928	9,015	9,139	9,122	8,785
Total science and engineering	2,668	1,945	2,334	2,370	2,329	2,444	2,454	2,042	1,973
Physical sciences[a]	165	167	200	164	193	150	180	107	108
Mathematical sciences	104	74	161	162	146	155	160	83	104
Computer science	714	288	280	256	348	348	321	318	316
Agricultural sciences	48	28	77	74	62	107	77	75	70
Biological sciences	86	96	103	98	94	79	105	99	131
Psychology	137	151	179	178	122	159	164	141	141
Social sciences	406	302	350	416	440	508	523	456	398
Engineering	1,008	839	984	1,022	924	938	924	763	705
Non-S&E	6,592	5,456	5,432	5,817	6,599	6,571	6,685	7,080	6,812

See explanatory information and SOURCE at end of table.

Appendix table 5-5

Master's degrees in science and engineering awarded to men, by field, citizenship, and race/ethnicity: 1990–98

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Citizenship, race/ethnicity, and field	1990	1991	1992	1993	1994	1995	1996	1997	1998
Temporary residents, all fields	23,699	25,150	26,237	28,821	30,141	31,159	30,050	30,201	31,480
Total science and engineering	12,702	13,081	13,705	15,365	15,761	16,019	14,960	14,386	15,055
Physical sciences[a]	1,028	1,070	1,111	1,118	1,236	1,222	1,187	1,140	981
Mathematical sciences	649	683	712	751	738	784	710	663	665
Computer science	1,933	2,144	2,380	2,811	2,948	2,905	2,887	2,836	3,372
Agricultural sciences	450	424	499	486	444	429	401	417	363
Biological sciences	379	370	385	406	462	452	455	410	392
Psychology	136	104	95	111	130	148	124	127	116
Social sciences	1,584	1,613	1,528	1,659	1,657	1,717	1,593	1,607	1,731
Engineering	6,543	6,673	6,995	8,023	8,146	8,362	7,603	7,186	7,435
Non-S&E	10,997	12,069	12,532	13,456	14,380	15,140	15,090	15,815	16,425

[a] In this table, the physical sciences include the earth, atmospheric, and ocean sciences as well as physics, astronomy, and chemistry. See notes for more information.

NOTES: Data on race/ethnicity are for U.S. citizens and permanent residents only and do not include students on temporary visas. Because these data were collected on broad fields of study only until 1994, the trend data could not be adjusted to the exact field taxonomies used by the National Science Foundation.

SOURCE: Tabulations by National Science Foundation, Division of Science Resources Statistics; data from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey, various years.

Appendix table 5-6

Doctoral degrees awarded, by field: 1990–99

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total, all fields	36,067	37,534	38,890	39,801	41,034	41,743	42,414	42,555	42,683	41,140
Total science and engineering	22,868	24,023	24,675	25,443	26,205	26,535	27,229	27,245	27,309	25,953
Physical sciences	3,524	3,626	3,781	3,699	3,977	3,841	3,837	3,768	3,829	3,582
Astronomy	128	125	134	145	144	173	192	198	208	160
Chemistry	2,100	2,194	2,214	2,137	2,257	2,162	2,148	2,147	2,219	2,134
Physics	1,265	1,286	1,403	1,399	1,548	1,479	1,484	1,401	1,378	1,271
Other physical sciences	31	21	30	18	28	27	13	22	24	17
Earth, atmospheric, and ocean sciences	738	815	794	771	824	780	794	878	814	807
Atmospheric sciences	83	108	120	99	129	130	125	149	125	124
Earth sciences	477	560	503	479	509	454	452	489	504	453
Oceanography	128	112	114	125	125	115	134	144	112	130
Other earth, atmospheric, and ocean sciences	50	35	57	68	61	81	83	96	73	100
Mathematical sciences	892	1,039	1,058	1,146	1,118	1,190	1,122	1,125	1,177	1,085
Computer science	705	800	869	880	903	997	921	910	925	850
Agricultural sciences	1,174	1,073	1,063	968	1,078	1,036	1,037	982	1,037	965
Biological sciences	4,328	4,650	4,799	5,092	5,203	5,376	5,723	5,786	5,854	5,600
Psychology	3,281	3,250	3,263	3,420	3,379	3,429	3,491	3,571	3,685	3,667
Clinical psychology	1,885	1,884	1,904	1,956	1,866	1,909	1,923	1,903	1,955	2,085
Nonclinical psychology	1,396	1,366	1,359	1,464	1,642	1,670	1,719	1,670	1,730	1,582
Experimental/biological psychology	273	288	312	337	369	351	339	394	360	378
Individual/social psychology	324	315	326	349	480	473	533	548	596	514
Other psychology	799	763	721	778	793	846	847	728	774	690
Social sciences	3,332	3,556	3,610	3,769	3,901	3,878	3,999	4,111	4,058	4,060
Economics	1,007	1,053	1,051	1,067	1,101	1,152	1,177	1,163	1,155	1,076
Political science and public administration	734	740	804	824	930	894	928	974	962	1,016
Sociology	448	493	512	535	548	555	527	601	581	571
Anthropology	346	374	353	380	418	410	417	469	459	487
Linguistics	167	227	266	214	221	201	230	244	220	250
History of science	26	27	28	37	27	41	37	36	43	49
Area and ethnic studies	94	116	114	137	122	121	143	94	114	109
Other social sciences	510	526	482	575	534	504	540	530	524	502
Engineering	4,894	5,214	5,438	5,698	5,822	6,008	6,305	6,114	5,930	5,337
Aerospace engineering	192	207	234	228	230	252	287	273	243	207
Chemical engineering	658	691	725	737	725	708	798	767	775	678
Civil engineering	553	575	594	624	684	656	697	656	651	585
Electrical engineering	1,276	1,405	1,483	1,543	1,673	1,731	1,740	1,721	1,596	1,477
Industrial engineering	151	165	196	236	228	284	258	246	230	209
Materials engineering	440	489	485	535	539	588	572	581	565	470
Mechanical engineering	884	875	987	1,030	1,015	1,025	1,052	1,021	1,023	853
Other engineering	740	807	734	765	728	764	901	849	847	858
Total non-S&E	13,199	13,511	14,215	14,358	14,829	15,208	15,185	15,310	15,374	15,187
Health	956	1,041	1,112	1,197	1,296	1,330	1,324	1,423	1,503	1,410
Humanities	3,535	3,720	4,036	4,092	4,374	4,690	4,713	5,037	5,114	5,045
Education	6,510	6,454	6,677	6,689	6,708	6,649	6,772	6,573	6,575	6,557
Professional/other	2,198	2,296	2,390	2,380	2,451	2,539	2,376	2,277	2,182	2,175

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-7

Doctoral degrees awarded to women, by field: 1990–99

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Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent awarded to women	
											1990	1999
Total, all fields	13,106	13,873	14,436	15,122	15,820	16,414	16,944	17,251	17,858	17,493	36.3	42.5
Total science and engineering	6,370	6,932	7,080	7,652	7,921	8,286	8,646	8,943	9,355	9,084	27.9	35.0
Physical sciences	661	679	770	780	828	878	842	852	927	831	18.8	23.2
Astronomy	20	14	19	25	25	30	41	37	46	32	15.6	20.0
Chemistry	503	517	579	582	625	661	605	613	695	633	24.0	29.7
Physics	130	142	167	169	175	182	193	193	177	160	10.3	12.6
Other physical sciences	8	6	5	4	3	5	3	9	9	6	25.8	35.3
Earth, atmospheric, and ocean sciences	141	179	188	160	183	170	172	210	219	210	19.1	26.0
Atmospheric sciences	14	16	27	18	26	23	22	25	30	22	16.9	17.7
Earth sciences	85	124	115	89	95	91	88	119	127	112	17.8	24.7
Oceanography	31	26	29	35	38	28	39	38	32	45	24.2	34.6
Other earth, atmospheric, and ocean sciences	11	13	17	18	24	28	23	28	30	31	22.0	31.0
Mathematical sciences	158	199	205	264	236	265	231	263	297	277	17.7	25.5
Computer science	110	117	120	138	137	186	139	150	159	156	15.6	18.4
Agricultural sciences	246	209	233	228	249	228	282	260	298	280	21.0	29.0
Biological sciences	1,615	1,773	1,831	2,050	2,109	2,217	2,415	2,494	2,538	2,400	37.3	42.9
Psychology	1,913	1,996	1,928	2,088	2,101	2,180	2,328	2,372	2,460	2,447	58.3	66.7
Clinical psychology	1,119	1,211	1,158	1,222	1,205	1,266	1,321	1,324	1,373	1,462	59.4	70.1
Nonclinical psychology	794	785	770	866	999	1,032	1,128	1,050	1,087	985	56.9	62.3
Experimental/biological psychology	115	136	147	169	186	171	171	190	168	191	42.1	50.5
Individual/social psychology	214	209	217	234	347	332	397	400	429	381	66.0	74.1
Other psychology	465	440	406	463	466	529	560	460	490	413	58.2	59.9
Social sciences	1,111	1,313	1,299	1,422	1,443	1,466	1,461	1,591	1,684	1,692	33.3	41.7
Economics	200	217	219	246	249	279	263	266	311	291	19.9	27.0
Political science and public administration	170	211	235	246	282	266	305	297	365	356	23.2	35.0
Sociology	218	246	250	255	283	294	276	334	318	341	48.7	59.7
Anthropology	185	230	172	231	225	237	225	261	262	273	53.5	56.1
Linguistics	90	112	133	118	134	102	113	135	123	147	53.9	58.8
History of science	9	11	8	16	10	17	10	13	19	18	34.6	36.7
Area and ethnic studies	46	61	58	68	65	65	76	52	63	59	48.9	54.1
Other social sciences	193	225	224	242	195	206	193	233	223	207	37.8	41.2
Engineering	415	467	506	522	635	696	776	751	773	791	8.5	14.8
Aerospace engineering	4	7	8	8	11	14	24	16	15	17	2.1	8.2
Chemical engineering	78	83	113	94	113	109	143	122	140	124	11.9	18.3
Civil engineering	49	41	50	54	80	76	79	80	100	89	8.9	15.2
Electrical engineering	84	79	115	125	147	173	169	150	156	156	6.6	10.6
Industrial engineering	25	17	25	27	33	50	51	40	40	43	4.3	11.1
Materials engineering	49	77	61	78	83	95	83	106	84	88	11.1	18.7
Mechanical engineering	38	57	45	57	69	64	78	88	93	95	16.6	20.6
Other engineering	88	106	89	79	99	115	149	149	145	179	11.9	20.9

See SOURCE at end of table.

Appendix table 5-7

Doctoral degrees awarded to women, by field: 1990–99

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Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent awarded to women	
											1990	1999
Total non-S&E	6,736	6,941	7,356	7,470	7,899	8,128	8,298	8,308	8,503	8,409	51.0	55.4
Health	592	668	710	777	843	843	860	937	1,008	901	61.9	63.9
Humanities	1,600	1,720	1,858	1,919	2,054	2,256	2,343	2,382	2,467	2,425	45.3	48.1
Education	3,752	3,748	3,976	3,921	4,089	4,092	4,179	4,120	4,132	4,196	57.6	64.0
Professional/other	792	805	812	853	913	937	916	869	896	887	36.0	40.8

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-8

Doctoral degrees awarded to men, by field: 1990–99

Field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total, all fields	22,960	23,525	24,235	24,384	25,059	25,159	25,274	24,944	24,659	23,460
Total science and engineering	16,498	16,986	17,422	17,568	18,165	18,117	18,445	18,084	17,833	16,745
Physical sciences	2,863	2,934	2,986	2,880	3,128	2,944	2,968	2,892	2,883	2,736
Astronomy	108	110	114	120	119	143	151	161	162	128
Chemistry	1,597	1,672	1,621	1,530	1,621	1,488	1,525	1,522	1,512	1,494
Physics	1,135	1,137	1,226	1,216	1,364	1,291	1,282	1,196	1,195	1,103
Other physical sciences	23	15	25	14	24	22	10	13	14	11
Earth, atmospheric, and ocean sciences	597	631	600	602	635	608	614	662	592	593
Atmospheric sciences	69	89	92	79	101	106	100	124	93	101
Earth sciences	392	436	385	384	411	362	361	366	376	339
Oceanography	97	86	83	89	86	87	94	105	80	85
Other earth, atmospheric, and ocean sciences	39	20	40	50	37	53	59	67	43	68
Mathematical sciences	734	836	841	865	879	919	881	853	872	805
Computer science	595	679	747	737	762	808	776	744	763	687
Agricultural sciences	928	860	824	736	827	804	755	715	738	681
Biological sciences	2,713	2,864	2,952	3,014	3,076	3,132	3,286	3,260	3,301	3,181
Psychology	1,368	1,249	1,328	1,322	1,273	1,246	1,160	1,165	1,210	1,210
Clinical psychology	766	671	743	731	660	641	602	564	576	622
Nonclinical psychology	602	578	585	591	588	573	528	601	634	588
Experimental/biological psychology	158	152	165	168	183	180	168	204	191	187
Individual/social psychology	110	106	109	113	107	109	106	144	165	132
Other psychology	334	320	311	310	298	284	254	253	278	269
Social sciences	2,221	2,230	2,284	2,315	2,435	2,386	2,520	2,480	2,356	2,349
Economics	807	833	821	808	845	864	905	876	840	781
Political science and public administration	564	527	565	569	643	619	620	674	596	655
Sociology	230	247	262	279	261	258	246	265	261	228
Anthropology	161	143	179	149	193	172	192	203	194	214
Linguistics	77	112	127	89	87	98	116	107	96	99
History of science	17	15	20	21	17	24	27	22	24	31
Area and ethnic studies	48	55	56	68	57	55	67	42	51	48
Other social sciences	317	298	254	332	332	296	347	291	294	293
Engineering	4,479	4,703	4,860	5,097	5,150	5,270	5,485	5,313	5,118	4,503
Aerospace engineering	188	198	217	218	219	237	262	254	227	189
Chemical engineering	580	605	609	638	609	597	653	641	629	553
Civil engineering	504	529	535	558	598	575	615	572	545	495
Electrical engineering	1,192	1,312	1,352	1,403	1,516	1,545	1,555	1,560	1,429	1,308
Industrial engineering	126	146	169	207	195	231	207	205	189	166
Materials engineering	391	412	416	449	452	489	482	469	477	377
Mechanical engineering	846	810	933	955	940	954	963	927	923	749
Other engineering	652	691	629	669	621	642	748	685	699	666
Total non-S&E	6,462	6,539	6,813	6,816	6,894	7,042	6,829	6,860	6,826	6,715
Health	364	369	394	408	444	478	456	470	489	499
Humanities	1,301	1,402	1,498	1,498	1,572	1,746	1,617	1,879	1,903	1,806
Education	2,758	2,696	2,688	2,748	2,610	2,547	2,574	2,393	2,426	2,344
Professional/other	2,039	2,072	2,233	2,162	2,268	2,271	2,182	2,118	2,008	2,066

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-9

Top 50 baccalaureate-origin institutions of 1995–99 S&E doctorate recipients, by sex

Rank and name of baccalaureate-origin institution	Number of male S&E doctorate recipients who attended	Rank and name of baccalaureate-origin institution	Number of male S&E doctorate recipients who attended
Total, all institutions	89,224	Total, all institutions	44,314
1 University of California–Berkeley	1,090	1 University of California–Berkeley	611
2 University of Illinois–Urbana-Champaign	759	2 University of Michigan–Ann Arbor	427
3 Massachusetts Institute of Technology	755	3 University of California–Los Angeles	331
4 University of Michigan–Ann Arbor	643	4 University of Illinois–Urbana-Champaign	326
5 Pennsylvania State University–main campus	629	5 University of Wisconsin–Madison	308
6 University of Wisconsin–Madison	628	6 Harvard University	291
7 University of Texas–Austin	540	7 University of Texas–Austin	288
8 Harvard University	508	8 University of California–Davis	276
9 University of Minnesota–Twin Cities	506	9 Stanford University	243
10 Brigham Young University–main campus	485	10 Pennsylvania State University–main campus	241
11 Purdue University–main campus	473	11 Michigan State University	240
12 Texas A&M University–main campus	457	12 Yale University	233
13 University of California–Davis	446	13 University of Minnesota–Twin Cities	232
14 University of California–Los Angeles	424	14 Ohio State University–main campus	229
15 Stanford University	410	15 Massachusetts Institute of Technology	228
16 Virginia Polytechnic Institute and State University	406	16 Brown University	224
17 Princeton University	398	16 University of Pennsylvania	224
18 Michigan State University	389	18 Texas A&M University–main campus	222
19 Ohio State University–main campus	388	19 Rutgers University–New Brunswick	219
20 University of Washington–Seattle	377	20 Duke University	214
21 University of Florida	372	21 University of Virginia–main campus	210
22 University of Pennsylvania	356	22 University of California–San Diego	202
23 University of California–San Diego	345	23 University of Colorado–Boulder	201
24 Iowa State University	337	24 University of Florida	192
25 Rutgers University–New Brunswick	335	25 University of Washington–Seattle	191
26 University of Colorado–Boulder	330	26 Princeton University	183
27 Yale University	328	27 Purdue University–main campus	180
28 California Institute of Technology	326	28 University of Maryland–College Park	173
28 University of Virginia–main campus	326	29 Cornell University–all campuses	168
30 University of Maryland–College Park	315	29 University of North Carolina–Chapel Hill	168
31 University of Chicago	304	31 Wellesley College	167
32 Rensselaer Polytechnic Institute	303	32 Indiana University–Bloomington	165
33 Georgia Institute of Technology–main campus	289	32 University of California–Santa Cruz	165
34 Brown University	287	34 Northwestern University	164
35 North Carolina State University–Raleigh	279	34 Smith College	164
36 Duke University	277	36 University of California–Irvine	162
37 University of Massachusetts–Amherst	275	37 University of Massachusetts–Amherst	160
38 Cornell University–all campuses	274	38 University of Chicago	159
39 SUNY at Buffalo	262	39 University of Puerto Rico–Rio Piedras	150
40 University of California-Santa Cruz	255	40 Virginia Polytechnic Institute and State University	149
41 University of California-Santa Barbara	254	41 Oberlin College	148
42 University of Arizona	246	42 University of California-Santa Barbara	146
43 Northwestern University	244	43 University of Arizona	142
44 University of Notre Dame	243	44 Iowa State University	137
45 University of California-Irvine	240	44 University of Iowa	137
46 Carnegie Mellon University	239	46 College of William and Mary	136
47 Rice University	231	47 Boston University	135
48 Washington University	229	48 Mount Holyoke College	134
49 Columbia University in the City of New York	216	49 Bryn Mawr College	129
50 Johns Hopkins University	213	50 Tufts University	128

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-10

Doctorate recipients, by race/ethnicity, citizenship, and field of degree: 1999

Race/ethnicity and citizenship	Total, all fields	Total S&E	Engineering	Sciences									Non-S&E
				Total	Mathematics & statistics	Computer science	Physical sciences	Earth, atmospheric & ocean sciences	Agricultural sciences	Biological sciences	Psychology	Social sciences	
	Number												
All doctorate recipients	41,140	25,953	5,337	20,616	1,085	850	3,582	807	965	5,600	3,667	4,060	15,187
U.S. citizen	27,622	15,783	2,474	13,309	538	412	2,023	470	440	3,654	3,161	2,611	11,839
Noncitizen	13,518	10,170	2,863	7,307	547	438	1,559	337	525	1,946	506	1,449	3,348
White, non-Hispanic	26,450	15,667	2,606	13,061	678	454	2,207	511	497	3,420	2,764	2,530	10,783
U.S. citizen	22,929	13,136	1,982	11,154	474	329	1,742	408	385	3,028	2,632	2,156	9,793
Noncitizen	3,521	2,531	624	1,907	204	125	465	103	112	392	132	374	990
Asian/Pacific Islander	8,032	6,465	2,036	4,429	292	290	932	178	260	1,516	209	752	1,567
U.S. citizen	1,324	1,004	266	738	31	42	128	15	20	297	107	98	320
Noncitizen	6,708	5,461	1,770	3,691	261	248	804	163	240	1,219	102	654	1,247
Black, non-Hispanic	2,071	919	131	788	19	23	88	19	67	145	179	248	1,152
U.S. citizen	1,596	639	84	555	10	16	54	11	16	109	169	170	957
Noncitizen	475	280	47	233	9	7	34	8	51	36	10	78	195
Hispanic	1,842	1,143	179	964	36	31	98	34	106	224	214	221	699
U.S. citizen	1,109	615	71	544	12	12	51	18	10	145	192	104	494
Noncitizen	733	528	108	420	24	19	47	16	96	79	22	117	205
American Indian/ Alaskan Native	219	117	12	105	1	1	10	6	2	20	36	29	102
Unknown race/ethnicity	2,526	1,642	373	1,269	59	51	247	59	33	275	265	280	884
U.S. citizen	445	272	59	213	10	12	38	12	7	55	25	54	173
Noncitizen	2,081	1,370	314	1,056	49	39	209	47	26	220	240	226	711
	Percent												
All doctorate recipients	100.0	63.1	13.0	50.1	2.6	2.1	8.7	2.0	2.3	13.6	8.9	9.9	36.9
U.S. citizen	100.0	57.1	9.0	48.2	1.9	1.5	7.3	1.7	1.6	13.2	11.4	9.5	42.9
Noncitizen	100.0	75.2	21.2	54.1	4.0	3.2	11.5	2.5	3.9	14.4	3.7	10.7	24.8
White, non-Hispanic	100.0	59.2	9.9	49.4	2.6	1.7	8.3	1.9	1.9	12.9	10.4	9.6	40.8
U.S. citizen	100.0	57.3	8.6	48.6	2.1	1.4	7.6	1.8	1.7	13.2	11.5	9.4	42.7
Noncitizen	100.0	71.9	17.7	54.2	5.8	3.6	13.2	2.9	3.2	11.1	3.7	10.6	28.1
Asian/Pacific Islander	100.0	80.5	25.3	55.1	3.6	3.6	11.6	2.2	3.2	18.9	2.6	9.4	19.5
U.S. citizen	100.0	75.8	20.1	55.7	2.3	3.2	9.7	1.1	1.5	22.4	8.1	7.4	24.2
Noncitizen	100.0	81.4	26.4	55.0	3.9	3.7	12.0	2.4	3.6	18.2	1.5	9.7	18.6
Black, non-Hispanic	100.0	44.4	6.3	38.0	0.9	1.1	4.2	0.9	3.2	7.0	8.6	12.0	55.6
U.S. citizen	100.0	40.0	5.3	34.8	0.6	1.0	3.4	0.7	1.0	6.8	10.6	10.7	60.0
Noncitizen	100.0	58.9	9.9	49.1	1.9	1.5	7.2	1.7	10.7	7.6	2.1	16.4	41.1
Hispanic	100.0	62.1	9.7	52.3	2.0	1.7	5.3	1.8	5.8	12.2	11.6	12.0	37.9
U.S. citizen	100.0	55.5	6.4	49.1	1.1	1.1	4.6	1.6	0.9	13.1	17.3	9.4	44.5
Noncitizen	100.0	72.0	14.7	57.3	3.3	2.6	6.4	2.2	13.1	10.8	3.0	16.0	28.0
American Indian/ Alaskan Native	100.0	53.4	5.5	47.9	0.5	0.5	4.6	2.7	0.9	9.1	16.4	13.2	46.6
Unknown race/ethnicity	100.0	65.0	14.8	50.2	2.3	2.0	9.8	2.3	1.3	10.9	10.5	11.1	35.0
U.S. citizen	100.0	61.1	13.3	47.9	2.2	2.7	8.5	2.7	1.6	12.4	5.6	12.1	38.9
Noncitizen	100.0	65.8	15.1	50.7	2.4	1.9	10.0	2.3	1.2	10.6	11.5	10.9	34.2

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent 1990	Percent 1999
U.S. citizens and permanent residents, all fields	26,603	27,430	27,990	28,708	30,894	32,058	31,518	31,086	31,166	29,922	100.0	100.0
Total science and engineering	15,364	15,914	15,942	16,573	18,187	18,996	18,639	18,402	18,268	17,428	100.0	100.0
Sciences	13,018	13,440	13,422	13,876	15,134	15,654	15,252	15,073	15,223	14,555	100.0	100.0
Physical sciences	2,341	2,300	2,357	2,330	2,789	2,841	2,569	2,497	2,455	2,263	100.0	100.0
Astronomy	96	86	106	111	112	141	149	158	148	116	100.0	100.0
Chemistry	1,497	1,461	1,441	1,400	1,616	1,624	1,462	1,439	1,466	1,400	100.0	100.0
Physics	725	739	790	806	1,044	1,059	948	883	823	735	100.0	100.0
Other physical sciences	23	14	20	13	17	17	10	17	18	12	100.0	100.0
Earth, atmospheric, and ocean sciences	535	618	541	504	613	594	558	606	562	521	100.0	100.0
Mathematical sciences	422	518	507	590	657	771	648	630	669	605	100.0	100.0
Computer science	403	451	489	509	543	616	514	521	558	483	100.0	100.0
Biological sciences	3,380	3,525	3,568	3,752	4,088	4,329	4,365	4,254	4,313	4,118	100.0	100.0
Agricultural sciences	687	620	573	506	616	598	576	551	543	491	100.0	100.0
Psychology	2,992	3,018	2,986	3,161	3,136	3,184	3,228	3,138	3,281	3,230	100.0	100.0
Clinical psychology	1,762	1,792	1,798	1,873	1,786	1,848	1,851	1,753	1,825	1,897	100.0	100.0
Nonclinical psychology	1,230	1,226	1,188	1,288	1,238	1,204	1,256	1,383	1,456	1,333	100.0	100.0
Social sciences[a]	2,258	2,390	2,401	2,524	2,692	2,721	2,794	2,876	2,842	2,844	100.0	100.0
Engineering	2,346	2,474	2,520	2,697	3,053	3,342	3,387	3,329	3,045	2,873	100.0	100.0
Chemical engineering	392	399	378	377	380	381	391	409	373	374	100.0	100.0
Civil engineering	241	213	215	227	292	309	305	327	297	310	100.0	100.0
Electrical engineering	599	686	719	795	899	971	928	938	804	762	100.0	100.0
Mechanical engineering	368	359	426	434	538	563	588	537	516	460	100.0	100.0
Other engineering	746	817	782	864	944	1,118	1,175	1,118	1,055	967	100.0	100.0
Total non-S&E	11,239	11,516	12,048	12,135	12,707	13,062	12,879	12,684	12,898	12,494	100.0	100.0
Health	756	839	855	939	1,050	1,044	1,016	1,028	1,155	1,043	100.0	100.0
Humanities	3,082	3,194	3,440	3,512	3,766	4,055	4,045	4,235	4,325	4,277	100.0	100.0
Education	5,787	5,788	6,017	5,968	6,063	5,995	6,062	5,744	5,741	5,609	100.0	100.0
Professional/other	1,614	1,695	1,736	1,716	1,828	1,968	1,756	1,677	1,677	1,565	100.0	100.0
Whites, non-Hispanic, all fields	22,878	23,186	23,626	24,052	24,595	24,721	24,691	23,958	24,313	23,725	86.0	79.3
Total science and engineering	13,170	13,324	13,327	13,737	13,890	13,906	14,008	13,829	14,026	13,656	85.7	78.4
Sciences	11,330	11,487	11,447	11,712	11,870	11,813	11,746	11,542	11,855	11,555	87.0	79.4
Physical sciences	2,008	1,969	1,974	1,911	2,025	1,924	1,887	1,883	1,914	1,831	85.8	80.9
Astronomy	86	83	95	100	97	111	131	132	121	108	89.6	93.1
Chemistry	1,284	1,239	1,220	1,145	1,179	1,112	1,063	1,078	1,127	1,088	85.8	77.7
Physics	618	634	641	656	736	687	684	658	650	624	85.2	84.9
Other physical sciences	20	13	18	10	13	14	9	15	16	11	87.0	91.7
Earth, atmospheric, and ocean sciences	494	557	485	455	504	464	449	487	464	430	92.3	82.5
Mathematical sciences	372	419	425	476	479	535	479	479	526	506	88.2	83.6
Computer science	339	355	378	410	401	452	356	361	411	348	84.1	72.0
Biological sciences	2,975	3,041	3,068	3,146	3,107	3,118	3,175	3,158	3,251	3,139	88.0	76.2
Agricultural sciences	601	545	493	438	487	473	444	411	418	398	87.5	81.1
Psychology	2,648	2,652	2,636	2,807	2,730	2,727	2,744	2,525	2,657	2,665	88.5	82.5
Clinical psychology	1,562	1,591	1,584	1,663	1,579	1,616	1,578	1,418	1,491	1,540	88.6	81.2
Nonclinical psychology	1,086	1,061	1,052	1,144	1,051	1,000	1,061	1,107	1,166	1,125	88.3	84.4
Social sciences[a]	1,893	1,949	1,988	2,069	2,137	2,120	2,212	2,238	2,214	2,238	83.8	78.7

See explanatory information and SOURCE at end of table.

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent 1990	Percent 1999
Engineering	1,840	1,837	1,880	2,025	2,020	2,093	2,262	2,287	2,171	2,101	78.4	73.1
Chemical engineering	318	322	284	295	259	257	275	294	276	287	81.1	76.7
Civil engineering	196	159	166	168	199	194	199	220	216	240	81.3	77.4
Electrical engineering	450	478	487	553	548	590	588	578	523	508	75.1	66.7
Mechanical engineering	286	266	326	328	337	339	392	376	371	334	77.7	72.6
Other engineering	590	612	617	681	677	713	808	819	785	732	79.1	75.7
Total non-S&E	9,708	9,862	10,299	10,315	10,705	10,815	10,683	10,129	10,287	10,069	86.4	80.6
Health	662	720	735	800	867	836	823	827	932	836	87.6	80.2
Humanities	2,766	2,821	3,061	3,109	3,283	3,521	3,487	3,526	3,605	3,621	89.7	84.7
Education	4,900	4,889	5,051	4,965	5,044	4,853	4,943	4,452	4,416	4,392	84.7	78.3
Professional/other	1,380	1,432	1,452	1,441	1,511	1,605	1,430	1,324	1,334	1,220	85.5	78.0
Asians/Pacific Islanders, all fields	1,306	1,531	1,764	2,017	3,546	4,309	3,699	3,122	2,729	2,518	4.9	8.4
Total science and engineering	1,009	1,180	1,345	1,610	2,989	3,669	3,095	2,539	2,148	1,951	6.6	11.2
Sciences	650	775	894	1,083	2,122	2,636	2,198	1,832	1,592	1,436	5.0	9.9
Physical sciences	164	172	227	265	600	751	503	402	334	257	7.0	11.4
Astronomy	5	0	4	4	10	22	12	8	13	3	5.2	2.6
Chemistry	99	122	135	157	332	416	295	235	207	187	6.6	13.4
Physics	58	50	88	103	255	312	195	158	113	67	8.0	9.1
Other physical sciences	2	0	0	1	3	1	1	1	1	0	8.7	0.0
Earth, atmospheric, and ocean sciences	15	17	27	22	89	104	77	72	51	39	2.8	7.5
Mathematical sciences	27	57	52	79	142	208	140	98	71	59	6.4	9.8
Computer science	48	66	86	77	117	137	111	108	91	86	11.9	17.8
Biological sciences	200	261	269	370	720	924	890	723	661	619	5.9	15.0
Agricultural sciences	32	24	37	29	72	78	81	63	47	45	4.7	9.2
Psychology	53	59	59	73	109	122	124	127	115	129	1.8	4.0
Clinical psychology	21	26	29	36	51	53	53	68	63	77	1.2	4.1
Nonclinical psychology	32	33	30	37	54	63	66	57	52	52	2.6	3.9
Social sciences[a]	111	119	137	168	273	312	272	239	222	202	4.9	7.1
Engineering	359	405	451	527	867	1,033	897	707	556	515	15.3	17.9
Chemical engineering	51	50	54	62	96	101	80	73	65	60	13.0	16.0
Civil engineering	28	30	34	41	69	91	89	72	38	46	11.6	14.8
Electrical engineering	115	140	175	199	304	322	276	256	206	172	19.2	22.6
Mechanical engineering	69	62	78	93	179	189	166	113	90	89	18.8	19.3
Other engineering	96	123	110	132	219	330	286	193	157	148	12.9	15.3
Total non-S&E	297	351	419	407	557	640	604	583	581	567	2.6	4.5
Health	39	44	52	45	94	93	87	87	85	85	5.2	8.1
Humanities	62	81	99	108	151	194	191	181	195	196	2.0	4.6
Education	104	130	144	144	173	179	185	181	180	170	1.8	3.0
Professional/other	92	96	124	110	139	174	141	134	121	116	5.7	7.4
Blacks, non-Hispanic, all fields	1,050	1,166	1,116	1,280	1,279	1,475	1,456	1,488	1,603	1,729	3.9	5.8
Total science and engineering	374	464	408	469	500	560	576	623	646	715	2.4	4.1
Sciences	334	409	359	419	446	489	502	525	562	619	2.6	4.3
Physical sciences	30	32	25	41	46	43	60	52	56	66	1.3	2.9
Astronomy	1	0	1	2	0	1	0	2	1	2	1.0	1.7
Chemistry	24	23	17	31	34	33	45	35	45	56	1.6	4.0
Physics	5	9	6	7	11	9	15	15	10	8	0.7	1.1
Other physical sciences	0	0	1	1	1	0	0	0	0	0	0.0	0.0

See explanatory information and SOURCE at end of table.

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent 1990	Percent 1999
Earth, atmospheric, and ocean sciences	3	3	6	4	6	3	4	8	9	14	0.6	2.7
Mathematical sciences	4	11	4	8	11	5	8	7	16	12	0.9	2.0
Computer science	1	8	5	6	10	11	12	4	14	18	0.2	3.7
Biological sciences	51	64	62	75	79	108	98	111	110	116	1.5	2.8
Agricultural sciences	15	17	14	16	22	17	25	25	19	24	2.2	4.9
Psychology	115	130	106	119	124	151	154	156	156	173	3.8	5.4
Clinical psychology	76	75	72	72	66	86	104	96	91	103	4.3	5.4
Nonclinical psychology	39	55	34	47	55	59	42	60	65	70	3.2	5.3
Social sciences[a]	115	144	137	150	148	151	141	162	182	196	5.1	6.9
Engineering	40	55	49	50	54	71	74	98	84	96	1.7	3.3
Chemical engineering	10	8	13	6	8	3	12	16	3	11	2.6	2.9
Civil engineering	1	12	3	5	8	11	8	10	10	6	0.4	1.9
Electrical engineering	8	16	17	15	17	24	22	31	23	29	1.3	3.8
Mechanical engineering	5	3	5	3	7	14	10	12	14	12	1.4	2.6
Other engineering	16	16	11	21	14	19	22	29	34	38	2.1	3.9
Total non-S&E	676	702	708	811	779	915	880	865	957	1,014	6.0	8.1
Health	32	40	38	59	46	60	49	56	65	57	4.2	5.5
Humanities	72	92	90	98	106	114	119	141	141	169	2.3	4.0
Education	496	472	501	557	521	627	608	558	652	650	8.6	11.6
Professional/other	76	98	79	97	106	114	104	110	99	138	4.7	8.8
Hispanics, all fields	837	868	909	973	1,030	1,054	1,103	1,191	1,319	1,246	3.1	4.2
Total science and engineering	468	493	513	542	548	563	618	656	753	688	3.0	3.9
Sciences	414	432	442	476	482	487	521	561	643	606	3.2	4.2
Physical sciences	72	65	72	79	90	73	66	69	54	57	3.1	2.5
Astronomy	2	1	4	2	2	4	2	3	2	0	2.1	0.0
Chemistry	57	46	42	51	59	43	35	44	34	42	3.8	3.0
Physics	13	18	26	26	29	26	29	22	18	15	1.8	2.0
Other physical sciences	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Earth, atmospheric, and ocean sciences	13	16	16	13	8	13	19	15	16	20	2.4	3.8
Mathematical sciences	10	9	12	16	13	15	10	20	27	15	2.4	2.5
Computer science	5	12	8	7	7	6	16	17	14	14	1.2	2.9
Biological sciences	89	95	102	114	131	125	128	146	169	164	2.6	4.0
Agricultural sciences	23	15	18	20	25	21	12	27	35	15	3.3	3.1
Psychology	109	122	133	131	133	145	173	171	207	202	3.6	6.3
Clinical psychology	60	77	88	87	78	71	97	104	115	141	3.4	7.4
Nonclinical psychology	49	45	45	44	53	67	74	67	92	61	4.0	4.6
Social sciences[a]	93	98	81	96	75	89	97	98	121	119	4.1	4.2
Engineering	54	61	71	66	66	76	97	95	110	82	2.3	2.9
Chemical engineering	8	11	16	10	7	12	18	6	13	7	2.0	1.9
Civil engineering	9	5	7	12	14	11	6	12	16	12	3.7	3.9
Electrical engineering	13	16	17	17	21	15	27	25	31	29	2.2	3.8
Mechanical engineering	5	9	11	5	8	8	12	15	19	9	1.4	2.0
Other engineering	19	20	20	22	16	30	34	37	31	25	2.5	2.6

See explanatory information and SOURCE at end of table.

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent 1990	Percent 1999
Total non-S&E	369	375	396	431	482	491	485	535	566	558	3.3	4.5
Health	17	16	13	24	25	30	38	32	37	46	2.2	4.4
Humanities	127	136	129	145	168	154	178	207	196	193	4.1	4.5
Education	190	189	214	222	241	258	216	253	285	266	3.3	4.7
Professional/other	35	34	40	40	48	49	53	43	48	53	2.2	3.4
Puerto Ricans, all fields	210	191	229	232	257	269	249	312	299	292	0.8	1.0
Total science and engineering	115	99	120	112	131	137	140	173	171	164	0.7	0.9
Sciences	109	90	107	102	121	124	118	150	154	141	0.8	1.0
Physical sciences	24	17	20	17	26	21	12	20	11	18	1.0	0.8
Astronomy	1	0	1	0	0	1	0	0	1	0	1.0	0.0
Chemistry	20	14	14	14	19	17	9	13	9	15	1.3	1.1
Physics	3	3	5	3	7	3	3	7	1	3	0.4	0.4
Other physical sciences	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Earth, atmospheric & ocean sciences	5	0	3	1	0	2	3	5	5	5	0.9	1.0
Mathematical sciences	2	0	2	1	1	1	3	4	7	2	0.5	0.3
Computer science	2	3	1	1	4	0	5	6	2	6	0.5	1.2
Biological sciences	24	23	27	27	28	30	30	37	43	39	0.7	0.9
Agricultural sciences	5	0	3	10	5	3	4	5	3	1	0.7	0.2
Psychology	26	20	35	24	43	44	48	57	69	49	0.9	1.5
Social sciences[a]	21	27	16	21	14	23	13	16	14	21	0.9	0.7
Engineering	6	9	13	10	10	13	22	23	17	23	0.3	0.8
Chemical engineering	2	2	3	2	2	4	4	1	3	2	0.5	0.5
Civil engineering	1	1	1	1	1	1	1	5	1	2	0.4	0.6
Electrical engineering	2	0	3	5	3	3	4	4	3	11	0.3	1.4
Mechanical engineering	0	2	1	1	1	1	3	6	5	2	0.0	0.4
Other engineering	1	4	5	1	3	4	10	7	5	6	0.1	0.6
Total non-S&E	95	92	109	120	126	132	109	139	128	128	0.8	1.0
Health	6	3	4	3	6	12	7	10	7	11	0.8	1.1
Humanities	28	30	22	36	38	30	38	49	36	30	0.9	0.7
Education	56	52	76	70	68	69	51	69	71	70	1.0	1.2
Professional/other	5	7	7	11	14	21	13	11	14	17	0.3	1.1
Mexicans, all fields	190	232	219	252	308	288	288	305	422	344	0.7	1.1
Total science and engineering	104	126	120	122	145	148	144	160	223	163	0.7	0.9
Sciences	91	112	110	110	130	129	118	142	193	150	0.7	1.0
Physical sciences	11	15	9	12	24	13	22	15	21	16	0.5	0.7
Astronomy	0	0	0	0	1	1	1	0	1	0	0.0	0.0
Chemistry	11	12	6	8	19	8	14	9	15	9	0.7	0.6
Physics	0	3	3	4	4	4	7	6	5	7	0.0	1.0
Other physical sciences	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Earth, atmospheric, and ocean sciences	3	4	7	2	4	4	5	3	5	5	0.6	1.0
Mathematical sciences	3	3	4	4	4	6	1	3	6	7	0.7	1.2
Computer science	0	0	3	1	2	3	1	2	3	1	0.0	0.2
Biological sciences	22	26	24	24	30	27	28	44	54	41	0.7	1.0
Agricultural sciences	8	5	5	4	6	4	1	2	10	3	1.2	0.6
Psychology	25	35	37	42	40	48	38	49	53	44	0.8	1.4
Social sciences[a]	19	24	21	21	20	24	22	24	41	33	0.8	1.2

See explanatory information and SOURCE at end of table

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent	
											1990	1999
Engineering	13	14	10	12	15	19	26	18	30	13	0.6	0.5
Chemical engineering	2	4	1	1	1	3	3	2	1	0	0.5	0.0
Civil engineering	2	2	2	0	2	7	2	2	5	3	0.8	1.0
Electrical engineering	4	3	3	2	4	3	9	5	7	4	0.7	0.5
Mechanical engineering	3	3	2	0	2	2	3	3	3	1	0.8	0.2
Other engineering	2	2	2	9	6	4	9	6	14	5	0.3	0.5
Total non-S&E	86	106	99	130	163	140	144	145	199	181	0.8	1.4
Health	7	3	5	8	5	8	6	7	15	16	0.9	1.5
Humanities	19	27	24	35	42	34	41	38	58	46	0.6	1.1
Education	50	67	58	74	102	93	79	90	115	101	0.9	1.8
Professional/other	10	9	12	13	14	5	18	10	11	18	0.6	1.2
Other Hispanics, all fields	437	445	461	489	465	497	566	574	598	610	1.6	2.0
Total science and engineering	249	268	273	308	272	278	334	323	359	361	1.6	2.1
Sciences	214	230	225	264	231	234	285	269	296	315	1.6	2.2
Physical sciences	37	33	43	50	40	39	32	34	22	23	1.6	1.0
Astronomy	1	1	3	2	1	2	1	3	0	0	1.0	0.0
Chemistry	26	20	22	29	21	18	12	22	10	18	1.7	1.3
Physics	10	12	18	19	18	19	19	9	12	5	1.4	0.7
Other physical sciences	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Earth, atmospheric, and ocean sciences	5	12	6	10	4	7	11	7	6	10	0.9	1.9
Mathematical sciences	5	6	6	11	8	8	6	13	14	6	1.2	1.0
Computer science	3	9	4	5	1	3	10	9	9	7	0.7	1.4
Biological sciences	43	46	51	63	73	68	70	65	72	84	1.3	2.0
Agricultural sciences	10	10	10	6	14	14	7	20	22	11	1.5	2.2
Psychology	58	67	61	65	50	53	87	65	85	109	1.9	3.4
Social sciences[a]	53	47	44	54	41	42	62	56	66	65	2.3	2.3
Engineering	35	38	48	44	41	44	49	54	63	46	1.5	1.6
Chemical engineering	4	5	12	7	4	5	11	3	9	5	1.0	1.3
Civil engineering	6	2	4	11	11	3	3	5	10	7	2.5	2.3
Electrical engineering	7	13	11	10	14	9	14	16	21	14	1.2	1.8
Mechanical engineering	2	4	8	4	5	5	6	6	11	6	0.5	1.3
Other engineering	16	14	13	12	7	22	15	24	12	14	2.1	1.4
Total non-S&E	188	177	188	181	193	219	232	251	239	249	1.7	2.0
Health	4	10	4	13	14	10	25	15	15	19	0.5	1.8
Humanities	80	79	83	74	88	90	99	120	102	117	2.6	2.7
Education	84	70	80	78	71	96	86	94	99	95	1.5	1.7
Professional/other	20	18	21	16	20	23	22	22	23	18	1.2	1.2
American Indians/Alaskan Natives, all fields	97	132	149	120	143	148	188	166	189	219	0.4	0.7
Total science and engineering	43	56	69	43	64	68	97	79	96	117	0.3	0.7
Sciences	39	50	58	41	58	59	82	62	83	105	0.3	0.7
Physical sciences	3	10	12	5	6	7	6	10	10	10	0.1	0.4
Astronomy	0	0	0	1	0	0	0	1	1	2	0.0	1.7
Chemistry	3	9	6	2	4	5	4	6	7	5	0.2	0.4
Physics	0	1	6	2	2	2	2	2	2	3	0.0	0.4
Other physical sciences	0	0	0	0	0	0	0	1	0	0	0.0	0.0

See explanatory information and SOURCE at end of table.

Appendix table 5-11

S&E doctorates awarded to U.S. citizens and permanent residents, by race/ethnicity and field: 1990–99

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Race/ethnicity and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Percent 1990	Percent 1999
Earth, atmospheric, and ocean sciences	1	3	1	4	1	0	2	2	3	6	0.2	1.2
Mathematical sciences	1	0	2	1	2	2	1	1	3	1	0.2	0.2
Computer science	0	1	2	1	1	0	4	1	3	1	0.0	0.2
Biological sciences	4	10	13	7	16	15	20	7	12	20	0.1	0.5
Agricultural sciences	4	4	0	1	1	2	6	5	9	2	0.6	0.4
Psychology	19	13	15	15	12	14	18	18	31	36	0.6	1.1
Clinical psychology	14	8	10	9	8	8	12	11	19	24	0.8	1.3
Nonclinical psychology	5	5	5	6	3	6	6	7	12	12	0.4	0.9
Social sciences[a]	7	9	13	7	19	19	25	18	12	29	0.3	1.0
Engineering	4	6	11	2	6	9	15	17	13	12	0.2	0.4
Chemical engineering	0	1	1	1	1	2	1	4	3	2	0.0	0.5
Civil engineering	2	1	1	0	0	0	2	2	0	2	0.8	0.6
Electrical engineering	0	2	4	0	1	1	2	5	3	1	0.0	0.1
Mechanical engineering	0	1	1	0	0	2	4	6	2	2	0.0	0.4
Other engineering	2	1	4	1	4	4	6	0	5	5	0.3	0.5
Total non-S&E	54	76	80	77	79	80	91	87	93	102	0.5	0.8
Health	1	5	5	6	6	9	4	6	4	6	0.1	0.6
Humanities	6	10	18	10	20	18	18	19	21	21	0.2	0.5
Education	37	56	50	51	37	41	60	51	50	60	0.6	1.1
Professional/other	10	5	7	10	16	12	9	11	18	15	0.6	1.0

[a] Social sciences here include linguistics, history of science, American studies, and archaeology.

NOTE: Total includes "other" race/ethnicity not shown.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-12

Top baccalaureate-origin institutions of 1995–99 black S&E doctorate recipients

Rank and name of baccalaureate-origin institution	Number of S&E doctorate recipients who attended	Rank and name of baccalaureate-origin institution	Number of S&E doctorate recipients who attended
Total, all institutions	3,120	24 Xavier University of Louisiana*	19
1 Howard University*	116	28 Lincoln University (Pennsylvania)	18
2 Spelman College*	63	28 Tougaloo College	18
3 Southern University A&M–Baton Rouge*	35	30 Columbia University in the City of New York	17
4 Hampton University*	34	30 Prairie View A&M University	17
5 North Carolina A&T State University*	31	30 Temple University	17
5 North Carolina State University–Raleigh	31	33 North Carolina Central University*	16
7 Morehouse College*	30	33 Tennessee State University	16
8 Massachusetts Institute of Technology	28	35 CUNY Brooklyn College	15
9 University of California–Berkeley	26	35 Fisk University*	15
9 University of Maryland–College Park	26	35 New York University	15
9 University of Michigan–Ann Arbor	26	35 Princeton University	15
12 Brown University	24	35 University of South Carolina–Columbia	15
12 Northwestern University	24	35 University of Tennessee–Knoxville	15
14 Alabama A&M University*	23	35 Yale University	15
14 Tuskegee University*	23	42 Ohio State University–main campus	14
16 Harvard University	22	42 SUNY at Buffalo	14
16 University of Virginia–main campus	22	42 University of North Carolina–Chapel Hill	14
18 CUNY City College	21	42 University of Pennsylvania	14
18 Morgan State University*	21	42 University of Texas–Austin	14
20 Florida A&M University*	20	42 University of the District of Columbia	14
20 Jackson State University*	20	48 Clark Atlanta University*	12
20 Stanford University	20	48 CUNY Hunter College	12
20 Wayne State University	20	48 Grambling State University*	12
24 Michigan State University	19	48 Norfolk State University*	12
24 University of California–Los Angeles	19	48 Rutgers University	12
24 University of Illinois–Urbana-Champaign	19	48 University of Washington–Seattle	12

* historically black college or university

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-13

Top baccalaureate-origin institutions of 1995–99 Hispanic S&E doctorate recipients

Rank and name of baccalaureate-origin institution	Number of S&E doctorate recipients who attended
Total, all institutions	3,278
1 University of Puerto Rico–Rio Piedras*	241
2 University of Puerto Rico–Mayaguez*	136
3 University of California–Berkeley	67
4 University of Texas–Austin	58
5 University of California–Los Angeles	54
6 Florida International University*	45
7 University of Miami*	42
8 Massachusetts Institute of Technology	41
9 University of Florida	40
10 University of Texas–El Paso*	38
11 Texas A&M University–main campus	36
12 Stanford University	33
12 University of California–Irvine	33
14 University of California–Davis	32
15 University of New Mexico–all campuses*	30
16 New Mexico State University–all campuses*	26
17 Rutgers University	24
18 University of Michigan–Ann Arbor	21
19 University of California–San Diego	20
19 Yale University	20
21 University of California–Santa Cruz	18
22 San Diego State University	17
22 St. Mary's University*	17
24 Harvard University	16
24 The Pontifical Catholic Univ. of Puerto Rico*	16
24 University of Houston*	16
24 University of Maryland–College Park	16
24 University of South Florida	16
29 University of Arizona	15
29 University of California–Santa Barbara	15
29 University of Puerto Rico–Cayey*	15
29 University of Washington–Seattle	15
33 California State University–Los Angeles*	14
33 Cornell University–all campuses	14
33 New York University	14
33 Princeton University	14
33 University of Illinois–Urbana-Champaign	14
38 California Institute of Technology	13
38 California State University–Long Beach	13
38 California State University–Northridge*	13
38 University of Massachusetts–Amherst	13
38 University of Pennsylvania	13
43 Brown University	12
43 California State Polytechnic University Pomona	12
43 University of Chicago	12
43 University of Colorado–Boulder	12
47 Columbia University in the City of New York	11
47 Duke University	11
47 SUNY at Stony Brook–all campuses	11
47 Trinity University	11
47 University of Virginia–main campus	11
47 Virginia Polytechnic Institute and State University	11

* Hispanic-serving institution

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-14

Baccalaureate-origin institutions of 1995–99 American Indian/Alaskan Native S&E doctorate recipients

Rank and name of baccalaureate-origin institution	Number of S&E doctorate recipients who attended
Total, all institutions	457
1 University of California–Berkeley	14
2 University of Oklahoma–Norman	11
3 Oklahoma State University–all campuses	8
4 University of Missouri–Columbia	5
4 University of Texas–Austin	5
6 Auburn University–main campus	4
6 Northeastern State University	4
6 Purdue University–main campus	4
6 San Diego State University	4
6 Southwest Missouri State University	4
6 University of California–Davis	4
6 University of California–Irvine	4
6 University of Florida	4
6 University of Massachusetts–Amherst	4
6 University of New Mexico–all campuses	4
6 University of Washington–Seattle	4
6 University of Wisconsin–Madison	4
18 California State Polytechnic University–San Luis Obispo	3
18 Central Washington University	3
18 Georgia Institute of Technology–main campus	3
18 Iowa State University	3
18 Massachusetts Institute of Technology	3
18 New Mexico State University–all campuses	3
18 Northern Arizona University	3
18 San Jose State University	3
18 Texas A&M University–main campus	3
18 Tufts University	3
18 University of Alaska–Fairbanks	3
18 University of Arizona	3
18 University of California–Los Angeles	3
18 University of Central Oklahoma	3
18 University of North Dakota–all campuses	3
18 University of Pennsylvania	3
18 University of Pittsburgh–main campus	3
18 University of Tulsa	3
18 University of West Florida	3
18 University of Wisconsin–Milwaukee	3

NOTE: Includes institutions awarding baccalaureates to three or more American Indian/Alaskan Native S&E doctorate recipients in the 1995–99 period.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-15

Top baccalaureate-origin institutions of 1995–99 Asian/Pacific Islander S&E doctorate recipients

Rank and name of baccalaureate-origin institution	Number of S&E doctorate recipients who attended
Total, all institutions	13,402
1 University of California–Berkeley	413
2 Massachusetts Institute of Technology	160
3 Harvard University	130
4 University of California–Los Angeles	123
5 University of California–Davis	85
5 California Institute of Technology	85
6 Stanford University	81
7 University of Michigan–Ann Arbor	78
8 University of California–Irvine	75
9 Princeton University	72
10 University of Illinois–Urbana-Champaign	68
11 University of California–San Diego	63
12 University of Hawaii–Manoa	59
13 University of Pennsylvania	58
14 Yale University	52
14 University of Washington–Seattle	52
16 University of Texas–Austin	50
17 University of Maryland–College Park	49
18 Johns Hopkins University	46
19 University of Chicago	45
20 Northwestern University	40
21 Brown University	36
21 Purdue University–main campus	36
23 University of Wisconsin–Madison	35
24 Columbia University	33
24 University of Southern California	33
24 University of Minnesota–Twin Cities	33
24 Cornell University–all campuses	33
28 Rutgers University	30
29 Washington University	29
30 University of California–Santa Barbara	26
31 University of Virginia–main campus	25
31 Carnegie Mellon University	25
33 SUNY at Stony Brook–all campuses	24
33 Texas A&M University–main campus	24
35 Pennsylvania State University	23
35 University of Colorado–Boulder	23
35 University of Rochester	23
38 Georgia Institute of Technology–main campus	22
38 Rice University	22
40 SUNY–Buffalo	21
41 Harvey Mudd College	20
42 Duke University	19
42 Case Western Reserve University	19
42 Rensselaer Polytechnic Institute	19
45 Michigan State University	18
45 Ohio State University–main campus	18
47 Boston University	17
47 University of Florida	17
47 University of California–Riverside	17
47 Virginia Polytechnic Institute and State University	17

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-16

Science and engineering doctorates awarded to U.S. citizens and permanent residents, by sex and race/ethnicity: 1990–99

Sex and race/ethnicity	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Number									
All U.S. citizens and permanent residents	15,364	15,914	15,942	16,573	18,187	18,996	18,639	18,402	18,268	17,428
White, non-Hispanic	13,170	13,324	13,327	13,737	13,890	13,906	14,008	13,829	14,026	13,656
Asian/Pacific Islander	1,009	1,180	1,345	1,610	2,969	3,669	3,095	2,539	2,148	1,951
Black, non-Hispanic	374	464	408	469	500	560	576	623	646	715
Hispanic	468	493	513	542	546	563	618	656	753	688
Puerto Rican	115	99	120	112	131	137	140	173	171	164
Mexican American	104	126	120	122	145	146	144	160	223	163
Other Hispanic	249	268	273	308	272	278	334	323	359	361
American Indian/Alaskan Native	43	56	69	43	64	68	97	79	96	117
Other/unknown race/ethnicity	300	397	280	172	196	230	245	676	599	301
Male	10,182	10,314	10,363	10,543	11,692	12,082	11,676	11,392	11,076	10,434
White, non-Hispanic	8,648	8,585	8,624	8,724	8,732	8,683	8,653	8,559	8,530	8,235
Asian/Pacific Islander	757	805	926	1,077	2,168	2,554	2,112	1,644	1,375	1,223
Black, non-Hispanic	225	270	238	261	284	290	323	332	296	349
Hispanic	290	307	308	320	318	336	346	392	426	344
Puerto Rican	67	52	71	70	72	74	72	100	68	79
Mexican American	67	84	79	73	87	89	91	91	136	90
Other Hispanic	156	171	158	177	159	173	183	201	222	175
American Indian/Alaskan Native	25	37	42	25	40	42	62	45	54	61
Other/unknown race/ethnicity	237	310	225	136	150	177	180	420	395	222
Female	5,182	5,597	5,577	6,024	6,494	6,912	6,963	6,994	7,174	6,994
White, non-Hispanic	4,522	4,739	4,703	5,012	5,158	5,223	5,355	5,268	5,496	5,421
Asian/Pacific Islander	252	374	418	531	820	1,115	983	894	767	728
Black, non-Hispanic	149	194	170	208	216	270	253	291	350	366
Hispanic	178	186	205	222	230	227	272	264	327	344
Puerto Rican	48	47	49	42	59	63	68	73	103	85
Mexican American	37	42	41	49	58	59	53	69	87	73
Other Hispanic	93	97	115	131	113	105	151	122	137	186
American Indian/Alaskan Native	18	19	27	18	24	26	35	34	42	56
Other/unknown race/ethnicity	63	85	54	33	46	51	65	243	192	79
	Percent awarded to women									
All U.S. citizens and permanent residents	33.7	35.2	35.0	36.3	35.7	36.4	37.4	38.0	39.3	40.1
White, non-Hispanic	34.3	35.6	35.3	36.5	37.1	37.6	38.2	38.1	39.2	39.7
Asian/Pacific Islander	25.0	31.7	31.1	33.0	27.4	30.4	31.8	35.2	35.7	37.3
Black, non-Hispanic	39.8	41.8	41.7	44.3	43.2	48.2	43.9	46.7	54.2	51.2
Hispanic	38.0	37.7	40.0	41.0	42.0	40.3	44.0	40.2	43.4	50.0
Puerto Rican	41.7	47.5	40.8	37.5	45.0	46.0	48.6	42.2	60.2	51.8
Mexican American	35.6	33.3	34.2	40.2	40.0	39.9	36.8	43.1	39.0	44.8
Other Hispanic	37.3	36.2	42.1	42.5	41.5	37.8	45.2	37.8	38.2	51.5
American Indian/Alaskan Native	41.9	33.9	39.1	41.9	37.5	38.2	36.1	43.0	43.8	47.9
Other/unknown race/ethnicity	21.0	21.4	19.3	19.2	23.5	22.2	26.5	35.9	32.1	26.2

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-17

S&E doctorate awards, by sex, race/ethnicity, and field: 1999

Sex and S&E field	Total	White, non-Hispanic	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic				American Indian/ Alaskan Native
					Total	Puerto Rican	Mexican American	Other Hispanic	
	Percent distribution								
Men, total S&E	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sciences	77.2	78.7	65.0	79.1	82.8	81.0	90.0	80.0	83.6
Physical sciences	16.4	17.4	13.2	10.6	10.5	12.7	12.2	8.6	11.5
Astronomy	0.9	1.0	0.2	0.0	0.0	0.0	0.0	0.0	1.6
Chemistry	9.3	9.6	8.6	9.5	6.4	8.9	5.6	5.7	4.9
Physics	6.1	6.7	4.4	1.1	4.1	3.8	6.7	2.9	4.9
Other physical sciences	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences	3.5	3.7	2.3	2.6	4.7	5.1	4.4	4.6	4.9
Mathematics	4.0	4.2	3.0	1.7	2.9	2.5	5.6	1.7	1.6
Computer sciences	3.6	3.4	5.5	2.6	3.2	6.3	1.1	2.9	0.0
Agricultural sciences	3.2	3.3	2.3	4.6	2.3	0.0	3.3	2.9	1.6
Biological sciences	21.6	21.0	27.3	14.3	27.0	24.1	27.8	28.0	16.4
Psychology	10.1	11.0	2.8	11.5	16.0	19.0	17.8	13.7	21.3
Social sciences	14.7	14.7	8.6	31.2	16.3	11.4	17.8	17.7	26.2
Engineering	22.8	21.3	35.0	20.9	17.2	19.0	10.0	20.0	16.4
Chemical	2.9	2.9	3.7	2.0	0.9	1.3	0.0	1.1	1.6
Civil	2.4	2.3	3.4	1.1	1.7	1.3	1.1	2.3	1.6
Electrical	6.5	5.6	11.9	6.9	7.3	11.4	3.3	7.4	1.6
Mechanical	3.8	3.5	6.2	3.2	2.3	2.5	1.1	2.9	3.3
Other engineering	7.2	6.9	9.8	7.7	4.9	2.5	4.4	6.3	8.2
Women, total S&E	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sciences	93.0	93.5	88.0	93.7	93.3	90.6	94.5	94.1	96.4
Physical sciences	7.9	7.3	13.0	7.9	6.1	9.4	6.8	4.3	5.4
Astronomy	0.4	0.4	0.0	0.5	0.0	0.0	0.0	0.0	1.8
Chemistry	6.1	5.4	11.3	6.3	5.8	9.4	5.5	4.3	3.6
Physics	1.4	1.4	1.8	1.1	0.3	0.0	1.4	0.0	0.0
Other physical sciences	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Earth, atmospheric, and ocean sciences	2.2	2.3	1.5	1.4	1.2	1.2	1.4	1.1	5.4
Mathematics	2.7	2.9	3.0	1.6	1.5	0.0	2.7	1.6	0.0
Computer sciences	1.5	1.3	2.6	2.5	0.9	1.2	0.0	1.1	1.8
Agricultural sciences	2.3	2.3	2.3	2.2	2.0	1.2	0.0	3.2	1.8
Biological sciences	26.6	26.0	39.1	18.0	20.6	23.5	21.9	18.8	17.9
Psychology	31.1	32.5	13.0	36.3	42.7	40.0	38.4	45.7	41.1
Social sciences	18.7	19.0	13.3	23.8	18.3	14.1	23.3	18.3	23.2
Engineering	7.0	6.5	12.0	6.3	6.7	9.4	5.5	5.9	3.6
Chemical	1.1	0.9	2.1	1.1	1.2	1.2	0.0	1.6	1.8
Civil	0.9	0.9	0.7	0.5	1.7	1.2	2.7	1.6	1.8
Electrical	1.2	0.8	3.6	1.4	1.2	2.4	1.4	0.5	0.0
Mechanical	0.9	0.8	1.8	0.3	0.3	0.0	0.0	0.5	0.0
Other engineering	3.0	3.0	3.8	3.0	2.3	4.7	1.4	1.6	0.0
	Number								
Men	10,434	8,235	1,223	349	344	79	90	175	61
Women	6,994	5,421	728	366	344	85	73	186	56

NOTES: Data are for U.S. citizens and permanent residents only; total includes "other" race/ethnicity not shown separately.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-18

Recipients of science and engineering doctorates, by disability status: 1993–99

Disability status	1993	1994	1995	1996	1997	1998	1999
All recipients	25,443	26,205	26,535	27,229	27,245	27,309	25,953
Without a disability	25,112	25,832	26,178	26,945	26,925	26,986	25,621
With a disability	331	373	357	284	320	323	332
Auditory	51	62	45	41	45	36	40
Orthopedic	57	88	96	81	104	93	94
Visual	85	98	97	46	39	55	54
Vocal	7	13	5	7	7	11	6
Other or more than one	94	74	87	97	98	96	107
Unspecified	37	38	27	12	27	32	31

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-19

Baccalaureate-origin institutions of 1995–99 S&E doctorate recipients with disabilities, by disability type

Page 1 of 2

Baccalaureate-origin institution	Number of S&E doctorate recipients who attended	Type of disability					
		Auditory	Orthopedic	Visual	Vocal	Other or more than one	Unspecified
Total, all institutions	1,616	207	468	291	36	485	129
University of California–Berkeley	27	3	7	3	2	11	1
University of Wisconsin–Madison	21	1	5	1	2	10	2
Massachusetts Institute of Technology	12	1	5	1	0	4	1
Ohio State University–main campus	12	1	4	2	3	1	1
University of Washington–Seattle	12	0	5	1	0	5	1
University of Michigan–Ann Arbor	11	3	2	1	0	4	1
Brigham Young University–main campus	10	1	3	0	1	3	2
Harvard University	10	0	3	2	0	5	0
Texas A&M University–main campus	10	2	2	0	0	5	1
University of Colorado–Boulder	10	0	2	1	0	6	1
University of Illinois–Urbana-Champaign	10	2	3	0	0	4	1
Brown University	9	1	1	2	0	4	1
Duke University	9	0	4	1	1	1	2
Pennsylvania State University–main campus	9	1	3	3	0	2	0
Purdue University–main campus	9	1	0	1	1	6	0
University of California–Davis	9	3	4	1	0	1	0
Washington University	9	2	1	1	0	2	3
Yale University	9	1	4	1	0	3	0
Colorado State University	8	2	3	2	0	0	1
Cornell University–all campuses	8	2	2	1	0	2	1
Michigan State University	8	1	4	1	0	2	0
University of Kansas–main campus	8	1	1	1	0	4	1
University of Nebraska–Lincoln	8	1	2	1	0	3	1
University of Pennsylvania	8	0	2	2	0	3	1
University of Texas–Austin	8	1	3	0	1	2	1
California State University–Northridge	7	0	3	0	1	2	1
Kansas State University	7	1	3	2	0	1	0
Mount Holyoke College	7	2	2	1	0	2	0
Rutgers University–New Brunswick	7	0	2	1	0	3	1
Swarthmore College	7	1	1	0	1	3	1
University of California–Los Angeles	7	0	3	2	0	1	1
University of California–San Diego	7	1	5	0	0	1	0
University of Minnesota–Twin Cities	7	0	2	2	0	1	2
University of Missouri–Columbia	7	2	3	1	0	1	0
Dartmouth College	6	2	0	0	0	4	0
Florida State University	6	1	1	1	0	3	0
Indiana University–Bloomington	6	0	0	1	1	4	0
Iowa State University	6	1	2	1	0	2	0
Louisiana State University and A&M College	6	0	1	1	0	4	0
New York University	6	0	2	0	0	4	0
Princeton University	6	1	3	2	0	0	0
Rensselaer Polytechnic Institute	6	1	1	1	0	2	1

See explanatory information and SOURCE at end of table.

Appendix table 5-19.

Baccalaureate-origin institutions of 1995–99 S&E doctorate recipients with disabilities, by disability type

Page 2 of 2

Baccalaureate-origin institution	Number of S&E doctorate recipients who attended	Type of disability					
		Auditory	Orthopedic	Visual	Vocal	Other or more than one	Unspecified
United States Military Academy	6	0	4	0	0	2	0
University of California–Santa Cruz	6	2	3	0	0	1	0
University of Florida	6	2	2	0	0	2	0
University of Maryland–College Park	6	0	0	2	0	3	1
Arizona State University–main campus	5	1	2	1	0	1	0
Auburn University–main campus	5	2	1	1	1	0	0
California State University–Fullerton	5	0	2	0	0	2	1
Carnegie Mellon University	5	1	1	0	0	3	0
Earlham College	5	1	0	2	0	2	0
Oberlin College	5	0	0	1	0	4	0
Sonoma State University	5	0	2	2	0	1	0
Syracuse University–main campus	5	1	3	0	0	1	0
Tufts University	5	0	2	1	0	2	0
University of Arizona	5	0	2	1	0	2	0
University of California–Irvine	5	0	2	1	0	2	0
University of California–Riverside	5	0	2	1	0	2	0
University of Cincinnati–all campuses	5	1	0	1	0	3	0
University of Delaware	5	0	1	3	0	1	0
University of Illinois–Chicago	5	1	1	0	1	1	1
University of Maine	5	0	2	1	0	1	1
University of Massachusetts–Amherst	5	0	2	2	0	1	0
University of Northern Colorado	5	0	1	0	0	4	0
University of Notre Dame	5	3	0	0	0	1	1
University of Pittsburgh–main campus	5	2	1	1	0	1	0
University of Wyoming	5	0	2	1	0	2	0

NOTE: Includes institutions awarding baccalaureates to five or more S&E doctorate recipients with disabilities.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-20

Recipients of science and engineering doctorates, by field and disability status: 1999

Field	Number			Percent distribution	
	Total	Without a disability	With a disability	Without a disability	With a disability
Total science and engineering	25,953	25,621	332	100.0	100.0
Physical sciences	3,582	3,554	28	13.9	8.4
Earth, atmospheric, and ocean sciences	807	801	6	3.1	1.8
Mathematics and statistics	1,085	1,068	17	4.2	5.1
Computer science	850	843	7	3.3	2.1
Agricultural sciences	965	951	14	3.7	4.2
Biological sciences	5,600	5,536	64	21.6	19.3
Psychology	3,667	3,588	79	14.0	23.8
Social sciences	4,060	3,998	62	15.6	18.7
Engineering	5,337	5,282	55	20.6	16.6

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-21

Primary source of support of 1995–99 doctoral recipients, by sex and field

Page 1 of 2

Sex and primary source of support	Total S&E	Engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences
	Percent distribution									
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	24.5	16.7	9.0	18.2	13.8	27.0	23.3	14.7	50.0	36.3
Loans	4.2	1.1	0.6	1.2	0.7	1.2	2.2	1.3	14.7	5.4
Personal savings	0.7	0.6	0.2	0.7	0.3	1.3	0.8	0.3	1.2	1.4
Other personal earnings in graduate school	11.4	9.8	4.0	10.4	6.6	17.0	12.6	6.6	18.3	18.9
Other family earnings or savings	8.2	5.1	4.1	5.9	6.2	7.5	7.6	6.5	15.8	10.5
Teaching assistantship	14.7	7.2	19.2	12.3	51.3	11.5	5.8	11.2	12.4	21.5
Research assistantship, traineeship, internship	32.8	44.6	48.7	43.2	11.0	31.8	46.2	43.2	13.7	11.8
Research assistantship	29.8	43.2	47.4	42.6	10.2	31.1	45.9	34.5	11.8	10.9
Traineeship	2.9	1.3	1.2	0.6	0.8	0.6	0.3	8.7	1.6	0.9
Internship or residency	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.0
Fellowship/scholarship/dissertation grant	14.6	15.2	11.7	15.2	13.4	11.9	9.0	19.6	8.5	18.0
Fellowship/scholarship	14.4	15.0	11.5	14.6	13.4	11.8	8.7	19.0	8.4	17.6
Dissertation grant	0.3	0.2	0.2	0.5	0.0	0.1	0.3	0.5	0.1	0.4
Employer reimbursement/assistance	2.4	6.1	1.4	1.8	1.5	7.5	2.7	1.1	1.3	1.5
Foreign (non-U.S.) support	0.3	0.6	0.1	0.3	0.3	0.4	1.1	0.2	0.0	0.4
Other source of support	1.3	1.4	0.9	1.2	0.6	1.3	1.3	1.5	1.1	1.4
Unknown source of support	9.4	8.1	9.0	7.8	8.1	8.5	10.5	8.5	13.0	9.2
Male, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	21.2	17.5	9.1	20.1	12.9	25.2	25.0	14.6	47.7	34.9
Loans	2.9	1.1	0.7	1.2	0.7	1.0	2.3	1.4	14.2	5.4
Personal savings	0.7	0.7	0.2	0.8	0.3	1.4	0.8	0.4	1.3	1.3
Other personal earnings in graduate school	11.1	10.5	4.3	11.6	7.0	16.7	13.8	6.8	21.1	18.9
Other family earnings or savings	6.4	5.2	3.9	6.4	4.9	6.2	8.1	6.0	11.0	9.4
Teaching assistantship	15.1	7.3	18.9	11.8	52.1	11.0	5.4	11.9	13.8	22.7
Research assistantship, traineeship, internship	35.9	44.4	49.5	42.9	11.2	34.6	46.0	43.4	14.2	12.0
Research assistantship	33.4	43.3	48.5	42.6	10.3	34.1	45.8	35.0	12.1	11.3
Traineeship	2.4	1.0	1.0	0.2	0.8	0.5	0.1	8.3	1.7	0.6
Internship or residency	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.4	0.0
Fellowship/scholarship/dissertation grant	13.9	13.7	11.0	13.8	12.7	11.6	7.7	18.4	8.4	17.2
Fellowship/scholarship	13.7	13.6	10.9	13.4	12.7	11.5	7.5	18.0	8.4	16.9
Dissertation grant	0.2	0.2	0.1	0.4	0.0	0.1	0.3	0.4	0.0	0.3
Employer reimbursement/assistance	3.1	6.6	1.6	1.9	1.9	7.8	2.6	1.3	1.7	1.7
Foreign (non-U.S.) support	0.4	0.7	0.1	0.3	0.3	0.5	1.3	0.2	0.0	0.5
Other source of support	1.3	1.4	0.9	1.3	0.7	1.5	1.4	1.3	1.2	1.5
Unknown source of support	9.2	8.4	9.0	7.8	8.2	7.8	10.6	8.9	12.9	9.6

See explanatory information and SOURCE at end of table.

Appendix table 5-21

Primary source of support of 1995–99 doctoral recipients, by sex and field

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Sex and primary source of support	Total S&E	Engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences
Female, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	29.8	12.2	8.8	13.2	16.0	33.9	19.3	14.9	51.2	38.0
Loans	6.1	0.9	0.4	1.2	0.6	2.0	1.9	1.3	15.0	5.5
Personal savings	0.8	0.2	0.3	0.4	0.2	0.9	0.9	0.2	1.1	1.4
Other personal earnings in graduate school	11.8	6.3	3.2	7.1	5.6	18.2	9.9	6.3	16.9	19.0
Other family earnings or savings	11.1	4.8	4.9	4.5	9.6	12.8	6.7	7.1	18.2	12.0
Teaching assistantship	14.2	6.7	20.1	13.7	49.3	13.5	6.9	10.5	11.7	20.0
Research assistantship, traineeship, internship	27.8	46.1	46.2	43.9	10.5	21.2	46.9	43.0	13.5	11.6
Research assistantship	24.0	42.8	44.0	42.4	9.9	20.1	46.0	33.8	11.7	10.3
Traineeship	3.7	3.2	2.1	1.4	0.6	1.1	0.9	9.1	1.5	1.3
Internship or residency	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Fellowship/scholarship/dissertation grant	15.8	23.2	13.8	18.8	15.2	13.2	12.1	21.0	8.6	18.9
Fellowship/scholarship	15.5	22.8	13.5	18.1	15.2	13.2	11.8	20.3	8.5	18.5
Dissertation grant	0.4	0.4	0.2	0.8	0.0	0.0	0.4	0.7	0.1	0.5
Employer reimbursement/assistance	1.3	3.3	0.9	1.4	0.6	6.6	2.8	0.9	1.1	1.2
Foreign (non-U.S.) support	0.2	0.5	0.1	0.3	0.3	0.2	0.7	0.2	0.0	0.3
Other source of support	1.2	1.1	1.0	0.8	0.6	0.9	1.0	1.7	1.0	1.3
Unknown source of support	9.7	6.8	9.2	7.9	7.6	10.5	10.1	7.9	12.9	8.7
	Number									
Total, all students	91,733	15,976	12,625	2,841	3,323	2,692	2,759	21,379	16,061	14,077
Male	56,660	13,470	9,560	2,081	2,427	2,129	1,950	11,871	5,304	7,868
Female	35,037	2,499	3,061	759	895	561	808	9,502	10,745	6,207

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-22

Primary source of support of 1995–99 doctoral recipients, by race/ethnicity and field

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Race/ethnicity and primary source of support	Total S&E	Engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences
	Percent distribution									
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	24.5	16.7	9.0	18.2	13.8	27.0	23.3	14.7	50.0	36.3
Loans	4.2	1.1	0.6	1.2	0.7	1.2	2.2	1.3	14.7	5.4
Personal savings	0.7	0.6	0.2	0.7	0.3	1.3	0.8	0.3	1.2	1.4
Other personal earnings in graduate school	11.4	9.8	4.0	10.4	6.6	17.0	12.6	6.6	18.3	18.9
Other family earnings or savings	8.2	5.1	4.1	5.9	6.2	7.5	7.6	6.5	15.8	10.5
Teaching assistantship	14.7	7.2	19.2	12.3	51.3	11.5	5.8	11.2	12.4	21.5
Research assistantship, traineeship, internship	32.8	44.6	48.7	43.2	11.0	31.8	46.2	43.2	13.7	11.8
Research assistantship	29.8	43.2	47.4	42.6	10.2	31.1	45.9	34.5	11.8	10.9
Traineeship	2.9	1.3	1.2	0.6	0.8	0.6	0.3	8.7	1.6	0.9
Internship or residency	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.0
Fellowship/scholarship/dissertation grant	14.6	15.2	11.7	15.2	13.4	11.9	9.0	19.6	8.5	18.0
Fellowship/scholarship	14.4	15.0	11.5	14.6	13.4	11.8	8.7	19.0	8.4	17.6
Dissertation grant	0.3	0.2	0.2	0.5	0.0	0.1	0.3	0.5	0.1	0.4
Employer reimbursement/assistance	2.4	6.1	1.4	1.8	1.5	7.5	2.7	1.1	1.3	1.5
Foreign (non-U.S.) support	0.3	0.6	0.1	0.3	0.3	0.4	1.1	0.2	0.0	0.4
Other source of support	1.3	1.4	0.9	1.2	0.6	1.3	1.3	1.5	1.1	1.4
Unknown source of support	9.4	8.1	9.0	7.8	8.1	8.5	10.5	8.5	13.0	9.2
White, non-Hispanic, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	27.0	18.3	10.3	19.6	15.1	29.5	26.0	16.7	52.7	37.9
Loans	4.5	1.1	0.7	1.1	0.7	0.8	2.4	1.5	14.9	5.3
Personal savings	0.8	0.7	0.2	0.7	0.4	1.2	0.7	0.3	1.3	1.4
Other personal earnings in graduate school	12.6	11.3	4.4	11.2	7.2	19.3	14.2	7.4	19.3	20.0
Other family earnings or savings	9.3	5.3	4.9	6.6	6.9	8.1	8.7	7.5	17.2	11.2
Teaching assistantship	15.2	6.7	18.6	13.0	50.9	10.6	6.2	12.1	13.1	22.3
Research assistantship, traineeship, internship	32.0	43.2	49.6	41.3	11.4	30.7	45.4	42.7	14.4	12.1
Research assistantship	28.7	41.6	48.2	40.6	10.4	29.9	45.0	33.1	12.6	11.0
Traineeship	3.2	1.5	1.4	0.7	1.0	0.7	0.3	9.5	1.6	1.1
Internship or residency	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.3	0.0
Fellowship/scholarship/dissertation grant	14.1	16.6	12.1	16.2	14.1	12.7	8.7	18.6	6.5	16.8
Fellowship/scholarship	13.8	16.3	11.9	15.6	14.1	12.6	8.4	18.0	6.4	16.5
Dissertation grant	0.3	0.2	0.2	0.7	0.0	0.1	0.3	0.6	0.1	0.4
Employer reimbursement/assistance	2.6	7.2	1.7	1.9	1.7	7.9	3.1	1.3	1.2	1.6
Foreign (non-U.S.) support	0.2	0.4	0.1	0.2	0.2	0.3	0.5	0.1	0.0	0.3
Other source of support	1.2	1.4	0.8	1.2	0.5	1.2	1.2	1.4	1.1	1.3
Unknown source of support	7.7	6.1	7.0	6.6	5.9	7.1	8.9	7.1	10.9	7.6

See explanatory information and SOURCE at end of table.

Appendix table 5-22

Primary source of support of 1995–99 doctoral recipients, by race/ethnicity and field

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Race/ethnicity and primary source of support	Total S&E	Engineer-ing	Physical sciences	Earth, atmo-spheric & ocean sciences	Mathe-matics	Computer science	Agri-cultural sciences	Biological sciences	Psy-chology	Social sciences
	Percent distribution									
Asian/Pacific Islander, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	11.9	12.6	4.1	7.0	7.8	18.9	11.1	7.4	34.8	26.7
Loans	1.1	0.5	0.1	0.6	0.3	0.2	1.0	0.4	11.8	2.6
Personal savings	0.4	0.5	0.2	0.3	0.0	1.3	1.3	0.2	0.3	1.1
Other personal earnings in graduate school	5.6	6.4	2.2	3.2	3.8	11.4	4.8	3.5	10.2	12.9
Other family earnings or savings	4.7	5.2	1.6	2.9	3.6	6.0	4.1	3.3	12.5	10.1
Teaching assistantship	15.9	9.2	23.1	8.5	60.4	17.3	4.1	9.9	17.0	25.2
Research assistantship, traineeship, internship	45.4	54.3	51.0	65.9	10.8	40.7	64.0	50.5	17.2	15.1
Research assistantship	43.3	53.5	50.3	65.9	10.6	40.3	63.7	44.7	14.9	14.9
Traineeship	2.1	0.7	0.6	0.0	0.2	0.4	0.3	5.8	2.1	0.2
Internship or residency	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Fellowship/scholarship/dissertation grant	11.5	7.4	5.6	5.0	5.0	6.2	5.1	19.5	13.8	17.0
Fellowship/scholarship	11.3	7.4	5.6	5.0	5.0	6.0	4.8	19.3	13.8	16.7
Dissertation grant	0.1	0.1	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.3
Employer reimbursement/assistance	1.5	3.1	0.6	0.9	0.5	5.3	1.0	0.5	0.8	0.8
Foreign (non-U.S.) support	0.5	1.0	0.0	0.0	0.2	0.8	1.9	0.1	0.2	1.0
Other source of support	1.3	1.2	1.3	1.2	1.0	1.1	1.0	1.5	0.6	1.4
Unknown source of support	12.0	11.2	14.3	11.7	14.2	9.8	11.8	10.6	15.6	12.8
Black, non-Hispanic, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	25.5	13.9	5.4	26.3	14.6	23.7	14.5	12.2	38.9	36.3
Loans	8.4	3.1	1.1	10.5	4.2	10.2	1.8	3.3	15.2	11.3
Personal savings	0.7	0.2	0.0	0.0	0.0	0.0	0.9	0.4	1.1	1.2
Other personal earnings in graduate school	12.0	6.6	3.6	15.8	6.3	10.2	9.1	5.9	16.7	17.7
Other family earnings or savings	4.4	4.0	0.7	0.0	4.2	3.4	2.7	2.6	5.8	6.1
Teaching assistantship	8.8	5.2	17.3	10.5	22.9	6.8	6.4	6.8	7.1	10.5
Research assistantship, traineeship, internship	16.8	22.7	26.7	21.1	6.3	8.5	34.5	29.8	9.5	7.5
Research assistantship	14.6	20.3	26.0	21.1	6.3	8.5	34.5	22.8	8.1	6.5
Traineeship	2.1	2.1	0.7	0.0	0.0	0.0	0.0	7.0	1.3	1.0
Internship or residency	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Fellowship/scholarship/dissertation grant	31.3	38.5	32.5	28.9	45.8	32.2	20.0	35.5	27.8	28.2
Fellowship/scholarship	30.8	38.5	31.8	28.9	45.8	32.2	20.0	33.9	27.7	28.0
Dissertation grant	0.4	0.0	0.7	0.0	0.0	0.0	0.0	1.7	0.1	0.2
Employer reimbursement/assistance	2.5	6.6	2.2	5.3	2.1	11.9	0.0	1.1	2.0	1.6

See explanatory information and SOURCE at end of table.

Appendix table 5-22

Primary source of support of 1995–99 doctoral recipients, by race/ethnicity and field

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Race/ethnicity and primary source of support	Total S&E	Engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences
	Percent distribution									
Foreign (non-U.S.) support	0.3	0.5	0.0	0.0	0.0	0.0	4.5	0.2	0.0	0.1
Other source of support	1.9	1.9	2.5	2.6	0.0	3.4	0.9	2.2	1.5	1.8
Unknown source of support	12.9	10.6	13.4	5.3	8.3	13.6	19.1	12.2	13.2	14.1
Hispanic, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	24.9	16.5	11.3	16.9	11.5	40.3	21.8	12.4	42.1	30.8
Loans	6.8	2.8	1.9	1.2	0.0	9.0	2.7	1.8	15.9	7.5
Personal savings	0.6	0.4	0.0	1.2	1.1	1.5	2.7	0.0	0.3	1.9
Other personal earnings in graduate school	10.3	8.9	6.0	8.4	4.6	13.4	9.1	5.5	14.6	14.8
Other family earnings or savings	7.1	4.3	3.4	6.0	5.7	16.4	7.3	5.2	11.2	6.7
Teaching assistantship	10.6	6.3	16.6	10.8	35.6	10.4	3.6	8.2	7.1	17.2
Research assistantship, traineeship, internship	21.6	30.4	36.1	24.1	9.2	19.4	37.3	33.6	8.6	9.0
Research assistantship	18.9	28.3	34.2	22.9	9.2	19.4	37.3	26.8	6.2	8.8
Traineeship	2.7	2.2	1.9	1.2	0.0	0.0	0.0	6.8	2.1	0.2
Internship or residency	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Fellowship/scholarship/dissertation grant	24.3	24.3	25.4	27.7	27.6	11.9	13.6	31.3	18.2	26.8
Fellowship/scholarship	23.9	23.9	25.4	27.7	27.6	11.9	13.6	30.7	17.9	26.2
Dissertation grant	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0.6
Employer reimbursement/assistance	2.2	7.0	1.9	2.4	1.1	10.4	0.0	0.8	1.6	1.0
Foreign (non-U.S.) support	1.6	2.8	0.9	4.8	2.3	3.0	8.2	1.5	0.1	1.5
Other source of support	1.7	2.2	0.3	1.2	0.0	3.0	3.6	1.8	1.7	2.1
Unknown source of support	13.1	10.4	7.5	12.0	12.6	1.5	11.8	10.4	20.7	11.5
American Indian/Alaskan Native, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	27.4	27.3	11.6	30.8	25.0	33.3	4.2	16.2	35.0	39.0
Loans	5.3	3.0	0.0	0.0	0.0	0.0	0.0	2.7	12.8	5.0
Personal savings	1.3	0.0	2.3	7.7	0.0	0.0	0.0	1.4	0.9	2.0
Other personal earnings in graduate school	14.4	15.2	4.7	23.1	25.0	33.3	4.2	5.4	12.0	27.0
Other family earnings or savings	6.3	9.1	4.7	0.0	0.0	0.0	0.0	6.8	9.4	5.0
Teaching assistantship	9.6	3.0	14.0	7.7	37.5	0.0	8.3	1.4	8.5	19.0
Research assistantship, traineeship, internship	23.0	25.8	46.5	46.2	12.5	55.6	37.5	45.9	6.8	5.0
Research assistantship	20.8	24.2	44.2	46.2	12.5	44.4	37.5	37.8	6.0	5.0
Traineeship	2.2	1.5	2.3	0.0	0.0	11.1	0.0	8.1	0.9	0.0
Internship or residency	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fellowship/scholarship/dissertation grant	23.0	25.8	14.0	15.4	12.5	11.1	25.0	20.3	26.5	26.0
Fellowship/scholarship	22.8	24.2	14.0	15.4	12.5	11.1	25.0	20.3	26.5	26.0
Dissertation grant	0.2	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

See explanatory information and SOURCE at end of table.

Appendix table 5-22

Primary source of support of 1995–99 doctoral recipients, by race/ethnicity and field

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Race/ethnicity and primary source of support	Total S&E	Engineering	Physical sciences	Earth, atmospheric & ocean sciences	Mathematics	Computer science	Agricultural sciences	Biological sciences	Psychology	Social sciences
	Percent distribution									
Employer reimbursement/assistance	2.0	6.1	0.0	0.0	0.0	0.0	8.3	0.0	1.7	1.0
Foreign (non-U.S.) support	1.3	3.0	0.0	0.0	0.0	0.0	4.2	1.4	0.9	1.0
Other source of support	0.7	0.0	0.0	0.0	0.0	0.0	4.2	0.0	1.7	0.0
Unknown source of support	13.1	9.1	14.0	0.0	12.5	0.0	8.3	14.9	18.8	12.0
Other/unknown race/ethnicity, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal sources of support	16.0	11.1	6.3	22.9	13.9	14.6	17.5	11.8	22.1	27.9
Loans	2.8	0.7	0.3	2.9	1.3	3.1	1.8	1.1	8.1	4.6
Personal savings	0.8	1.2	0.3	0.0	0.0	3.1	0.0	0.0	0.6	1.7
Other personal earnings in graduate school	8.2	6.4	3.3	18.6	7.6	6.3	14.0	6.2	8.7	14.0
Other family earnings or savings	4.1	2.7	2.3	1.4	5.1	2.1	1.8	4.6	4.7	7.7
Teaching assistantship	9.5	6.4	15.0	11.4	34.2	2.1	3.5	5.6	3.7	14.8
Research assistantship, traineeship, internship	22.3	35.1	36.0	27.1	5.1	25.0	24.6	29.0	3.7	7.4
Research assistantship	20.3	34.6	35.3	27.1	5.1	25.0	22.8	21.2	2.8	6.6
Traineeship	1.9	0.2	0.7	0.0	0.0	0.0	1.8	7.8	0.6	0.9
Internship or residency	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Fellowship/scholarship	11.9	12.8	9.7	8.6	15.2	15.6	5.3	15.9	2.2	17.4
Dissertation grant	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.3
Employer reimbursement/assistance	1.6	3.5	0.5	1.4	0.0	8.3	3.5	0.5	0.0	1.4
Foreign (non-U.S.) support	0.6	1.2	0.0	0.0	2.5	0.0	0.0	0.3	0.3	0.9
Other source of support	1.5	1.5	1.3	1.4	2.5	2.1	1.8	1.6	0.6	1.7
Unknown source of support	36.5	28.1	31.3	27.1	26.6	32.3	43.9	34.7	67.3	28.2
	Number									
Total, all students	91,733	15,976	12,625	2,841	3,323	2,692	2,759	21,379	16,061	14,077
White, non-Hispanic	69,425	10,914	9,439	2,294	2,525	1,928	2,144	15,841	13,318	11,022
Asian/Pacific Islander	13,402	3,708	2,247	343	576	533	314	3,817	617	1,247
Black, non-Hispanic	3,120	423	277	38	48	59	110	543	790	832
Hispanic	3,278	460	319	83	87	67	110	732	898	522
American Indian/Alaskan Native	457	66	43	13	8	9	24	74	117	103
Other/unknown race/ethnicity	2,051	405	300	70	79	96	57	372	321	351

NOTE: Data are for U.S. citizens and permanent residents only

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Appendix table 5-23

Primary source of support of 1995–99 doctoral recipients, by disability status

Primary source of support	All doctoral recipients	Without disabilities	With disabilities
Number of recipients	91,733	90,384	1,349
	Percent distribution		
Total	100.0	100.0	100.0
Loans	4.2	4.1	8.5
Personal savings	0.7	0.7	1.8
Other personal earnings in graduate school	11.4	11.2	18.4
Other family earnings or savings	8.2	8.2	10.5
Teaching assistantship	14.7	14.8	13.1
Research assistantship	29.8	30.0	19.2
Traineeship	2.9	3.0	2.0
Fellowship/scholarship	14.4	14.4	13.6
Dissertation grant	0.3	0.3	0.4
Employer reimbursement/assistance	2.4	2.4	1.9
Foreign (non-U.S.) support	0.3	0.3	0.0
Other source of support	1.3	1.2	3.3
Unknown source of support	9.4	9.4	7.3

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates, various years.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-24

Age of S&E doctorate recipients by sex, race/ethnicity, and disability status: 1999

Sex, race/ethnicity, and disability status	Age (in years)		
	25th percentile	Median	75th percentile
Total	28.9	31.4	36.2
Male	28.8	31.4	35.9
Female	28.9	31.4	36.7
White, non-Hispanic	28.8	31.2	36.1
Asian/Pacific Islander	29.3	32.0	35.9
Black, non-Hispanic	29.6	33.0	38.9
Mexican American	29.6	31.8	35.5
Puerto Rican	29.1	31.4	37.4
Other Hispanic	29.8	33.4	39.2
American Indian/Alaskan Native	29.9	34.4	42.3
Without disabilities	28.8	31.3	36.0
With disabilities	30.6	36.9	45.2

NOTES: Data are for U.S. citizens and permanent residents only. Total includes 722 who did not report race/ethnicity, 717 who did not report disability status, and 164 who did not report age.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-25

S&E doctorate recipients, by sex, race/ethnicity, disability status, and educational attainment of parents: 1999

Sex, race/ethnicity, and disability status	Number	Educational attainment of mother							Educational attainment of father						
		Less than high school	High school	Some college	Bachelor's degree	Master's degree	Professional degree	Doctoral degree	Less than high school	High school	Some college	Bachelor's degree	Master's degree	Professional degree	Doctoral degree
		Percent distribution													
Total	17,038	7.7	23.2	18.9	25.2	16.7	4.3	4.0	7.2	16.6	12.9	22.4	15.8	8.7	16.4
Male	10,255	8.1	23.7	18.7	25.4	16.3	4.0	3.8	7.5	16.7	12.7	22.4	15.8	8.2	16.7
Female	6,783	7.1	22.4	19.2	25.0	17.2	4.8	4.3	6.9	16.3	13.3	22.3	15.9	9.5	15.8
White, non-Hispanic	13,351	4.4	23.8	19.8	26.0	18.0	4.1	4.0	5.1	16.4	13.0	22.4	16.9	9.0	17.1
Asian/Pacific Islander	1,925	20.4	19.4	13.7	25.8	10.5	5.4	4.9	12.3	13.5	10.3	28.6	11.7	8.1	15.3
Black, non-Hispanic	686	21.1	21.9	18.0	16.2	15.9	4.0	2.9	19.8	24.7	17.5	13.1	10.8	5.2	8.9
Mexican American	156	28.3	27.0	17.8	11.2	13.2	0.7	2.0	29.8	20.5	17.9	7.9	15.9	1.3	6.6
Puerto Rican	159	17.0	24.8	20.3	19.0	10.5	5.2	3.3	22.7	22.1	12.3	11.0	11.0	9.1	11.7
Other Hispanic	353	22.9	23.9	18.9	16.8	9.4	4.4	3.7	16.8	20.2	12.8	16.8	11.4	6.7	15.2
American Indian/Alaskan Native	112	24.2	27.3	17.2	18.2	9.1	2.0	2.0	21.4	29.6	15.3	9.2	9.2	7.1	8.2
With disabilities	268	7.5	30.5	17.3	22.6	15.0	4.5	2.6	9.5	17.8	14.8	18.6	14.4	9.8	15.2
Without disabilities	16,053	7.6	23.1	19.0	25.3	16.7	4.3	4.1	7.2	16.5	12.9	22.5	15.9	8.6	16.4

NOTES: Data are for U.S. citizens and permanent residents only. Total includes 679 respondents who did not report mother's education and 722 respondents who did not report father's education.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-26

S&E doctorate recipients, by sex, race/ethnicity, disability status, marital status, and number of dependents: 1999

Sex, race/ethnicity, and disability status	Number	Marital status					Number of dependents			
		Never married	Married	Separated/ divorced	Living in a marriage-like relationship	Widowed	0	1	2	3 or more
		Percent distribution								
Total	17,038	32.6	55.4	5.4	6.4	0.2	60.0	19.5	11.2	9.3
Men	10,255	32.8	57.4	4.2	5.5	0.2	54.6	20.2	12.5	12.7
Women	6,783	32.4	52.4	7.2	7.8	0.4	68.3	18.3	9.2	4.2
White, non-Hispanic	13,351	32.7	54.8	5.3	7.0	0.3	61.8	18.6	10.4	9.2
Asian/Pacific Islander	1,925	29.7	64.0	2.8	3.4	0.1	52.9	23.1	16.4	7.7
Black, non-Hispanic	686	40.7	46.1	10.6	2.3	0.3	54.8	19.5	11.3	14.4
Mexican American	156	34.6	53.6	5.9	5.9	0.0	56.4	22.1	12.8	8.7
Puerto Rican	159	34.8	49.7	8.4	7.1	0.0	53.3	23.0	9.2	14.5
Other Hispanic	353	29.2	52.0	9.4	9.1	0.3	52.4	24.5	12.4	10.7
American Indian/ Alaskan Native	112	23.8	54.5	12.9	7.9	1.0	44.6	28.7	13.9	12.9
Without disabilities	16,053	32.6	55.5	5.3	6.4	0.2	60.0	19.5	11.2	9.3
With disabilities	268	33.7	50.0	10.2	5.3	0.8	59.5	18.9	13.6	8.0

NOTES: Data are for U.S. citizens and permanent residents only. Total includes 679 respondents who did not report marital status and 859 respondents who did not report number of dependents.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-27

Satisfaction with highest degree field of study, by field, sex, race/ethnicity, and disability status: 1997

Field and likelihood of choosing same field of study	Total	Male	Female	White, non-Hispanic	Asian/ Pacific Islander	Black, non-Hispanic	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
	Percent									
Science and engineering, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	49.5	49.5	49.5	52.3	40.1	54.5	55.9	54.1	49.7	44.4
Somewhat likely	33.2	32.9	33.6	32.9	35.5	26.0	29.0	22.1	33.2	33.0
Not at all likely	17.3	17.6	16.9	14.8	24.4	19.4	15.2	23.8	17.2	22.7
Physical and related sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	41.9	42.1	41.1	43.3	36.9	47.9	54.1	S	42.1	34.5
Somewhat likely	34.0	34.2	33.5	36.3	30.0	21.1	31.5	S	34.2	27.3
Not at all likely	24.1	23.7	25.5	20.4	33.1	31.1	14.4	S	23.7	38.2
Mathematics and computer science	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	61.3	61.0	62.4	67.4	48.4	51.9	58.7	S	61.7	52.6
Somewhat likely	24.0	23.5	25.9	21.7	29.1	21.5	22.2	S	24.5	12.4
Not at all likely	14.8	15.5	11.7	10.9	22.5	26.6	19.0	S	13.8	35.1
Life and related sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	47.2	45.7	49.2	49.6	36.8	56.6	54.6	58.8	47.4	42.5
Somewhat likely	33.7	34.9	32.2	33.3	37.5	20.7	30.2	24.4	33.5	40.6
Not at all likely	19.1	19.4	18.6	17.1	25.7	22.7	15.2	16.8	19.2	16.9
Social and related sciences	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	53.1	56.4	50.1	54.2	45.1	54.2	52.5	46.4	53.4	45.0
Somewhat likely	34.0	31.7	36.2	34.1	36.3	28.3	34.7	23.2	33.9	37.0
Not at all likely	12.9	11.9	13.7	11.7	18.6	17.5	12.8	30.4	12.7	18.0
Engineering	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Very likely	50.4	50.1	52.7	57.2	40.7	56.4	66.1	S	50.4	49.8
Somewhat likely	33.7	33.9	31.4	30.5	38.6	35.3	14.2	S	33.8	29.0
Not at all likely	15.9	15.9	15.9	12.3	20.7	8.2	19.7	S	15.8	21.2
	Number									
Science and engineering, total	114,200	75,500	38,700	79,100	27,900	3,300	3,400	400	110,800	3,400
Physical and related sciences	19,800	15,600	4,200	13,300	5,600	400	500	S	19,400	500
Mathematics and computer science	7,900	6,300	1,600	5,200	2,400	100	200	S	7,500	300
Life and related sciences	32,400	18,200	14,200	23,300	7,000	1,000	1,000	100	31,400	1,000
Social and related sciences	30,700	14,800	15,900	24,900	2,900	1,400	1,200	200	29,600	1,100
Engineering	23,400	20,600	2,800	12,400	9,900	500	500	S	22,800	500

S suppressed for reasons of confidentiality

NOTE: The specific wording of the question was "If you had the chance to do it over again, knowing what you do now, how likely is it that you would choose the same field of study for your highest degree?"

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

Appendix table 5-28

S&E doctorate recipients with definite postgraduate plans, by sex and degree field: 1999

(Percent distribution)

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		In the United States						
Field of study	Definite plans	Total	Postdoctoral study	Academic employment	Industry employment	Other	Abroad	Location unknown
All recipients, all fields	100.0	96.4	25.8	35.5	16.1	19.0	3.2	0.4
Total science and engineering	100.0	96.1	39.6	21.8	22.0	12.7	3.6	0.3
Sciences	100.0	96.0	43.7	23.5	16.1	12.7	3.8	0.3
Physical sciences	100.0	95.1	48.9	10.3	30.5	5.4	4.5	0.4
Astronomy	100.0	89.2	60.2	9.7	11.8	7.5	10.8	—
Chemistry	100.0	96.2	48.2	10.2	34.0	3.7	3.3	0.5
Physics	100.0	94.0	48.6	10.3	26.9	8.1	5.6	0.4
Other physical sciences	100.0	100.0	33.3	22.2	22.2	22.2	—	—
Earth, atmospheric & ocean sciences	100.0	92.6	40.5	15.6	17.0	19.5	6.8	0.6
Mathematical sciences	100.0	94.7	26.0	45.7	16.8	6.2	5.1	0.2
Computer science	100.0	97.8	6.7	36.2	43.8	11.0	2.2	—
Agricultural sciences	100.0	97.5	31.7	29.5	23.6	12.7	2.5	—
Biological sciences	100.0	96.0	73.9	9.5	7.0	5.5	3.6	0.4
Psychology	100.0	98.8	37.4	21.5	16.0	24.0	1.1	—
Social sciences	100.0	93.8	11.6	52.5	11.3	18.5	6.0	0.2
Engineering	100.0	96.7	18.9	12.8	52.1	13.0	2.8	0.5
Aeronautical/astronautical	100.0	97.2	20.8	2.8	40.3	33.3	2.8	—
Chemical	100.0	96.7	20.4	6.3	65.8	4.1	3.3	—
Civil	100.0	96.9	20.0	21.5	36.9	18.5	2.1	1.0
Electrical	100.0	98.5	9.8	12.8	63.8	12.2	0.9	0.6
Industrial	100.0	95.9	5.5	28.8	45.2	16.4	2.7	1.4
Materials/metallurgical	100.0	93.2	22.8	7.4	53.7	9.3	6.8	—
Mechanical	100.0	96.2	22.2	14.3	47.0	12.7	2.9	1.0
Other engineering	100.0	96.0	28.4	12.9	39.8	14.9	3.7	0.3
Total non-S&E	100.0	97.0	6.0	55.3	7.5	28.1	2.5	0.5
Men, all fields	100.0	95.9	27.3	31.3	20.4	16.9	3.7	0.4
Total science and engineering	100.0	95.7	37.8	19.6	26.2	12.0	4.0	0.4
Sciences	100.0	95.3	43.4	21.9	18.5	11.5	4.4	0.3
Physical sciences	100.0	95.0	51.1	9.0	29.8	5.1	4.5	0.5
Astronomy	100.0	87.7	58.9	8.2	15.1	5.5	12.3	0.0
Chemistry	100.0	96.2	51.7	8.5	33.0	3.0	3.3	0.6
Physics	100.0	94.3	49.0	9.8	27.2	8.3	5.2	0.4
Other physical sciences	100.0	100.0	50.0	25.0	25.0	0.0	0.0	0.0
Earth, atmospheric & ocean sciences	100.0	91.9	39.0	13.1	17.0	22.8	7.3	0.8
Mathematical sciences	100.0	94.6	27.1	42.5	19.1	6.0	5.0	0.3
Computer science	100.0	97.8	5.1	34.4	46.5	11.7	2.2	0.0
Agricultural sciences	100.0	96.9	28.3	32.3	24.3	11.9	3.1	0.0
Biological sciences	100.0	95.5	73.6	9.3	7.3	5.3	4.1	0.4
Psychology	100.0	98.7	34.3	22.3	18.2	23.9	1.3	0.0
Social sciences	100.0	93.0	10.2	48.7	14.9	19.2	6.8	0.2

See explanatory information and SOURCE at end of table.

Appendix table 5-28

S&E doctorate recipients with definite postgraduate plans, by sex and degree field: 1999

(Percent distribution)

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Field of study	Definite plans	In the United States: Total	Postdoctoral study	Academic employment	Industry employment	Other	Abroad	Location unknown
Engineering	100.0	96.9	18.1	11.6	53.3	13.9	2.6	0.5
Aeronautical/astronautical	100.0	97.0	17.9	3.0	41.8	34.3	3.0	0.0
Chemical	100.0	96.3	20.0	5.1	67.0	4.2	3.7	0.0
Civil	100.0	96.1	19.5	17.5	39.6	19.5	2.6	1.3
Electrical	100.0	98.6	9.3	13.0	64.3	12.0	1.0	0.4
Industrial	100.0	93.9	6.1	24.5	42.9	20.4	4.1	2.0
Materials/metallurgical	100.0	95.2	24.8	8.8	52.0	9.6	4.8	0.0
Mechanical	100.0	96.8	23.2	12.1	47.9	13.6	2.5	0.7
Other engineering	100.0	96.3	25.4	11.6	41.0	18.3	3.4	0.4
Total non-S&E	100.0	96.4	5.7	55.4	8.4	26.9	3.2	0.4
Women, all fields	100.0	97.1	24.0	40.5	11.0	21.6	2.5	0.4
Total science and engineering	100.0	96.8	42.5	25.1	15.2	13.8	3.0	0.2
Sciences	100.0	96.8	44.0	25.6	12.9	14.3	3.0	0.2
Physical sciences	100.0	95.4	42.0	14.2	32.6	6.6	4.3	0.3
Astronomy	100.0	95.0	65.0	15.0	—	15.0	5.0	—
Chemistry	100.0	96.1	40.2	14.1	36.3	5.5	3.5	0.3
Physics	100.0	91.2	45.6	14.0	24.6	7.0	8.8	—
Other physical sciences	100.0	100.0	20.0	20.0	20.0	40.0	—	—
Earth, atmospheric & ocean sciences	100.0	94.7	44.7	22.3	17.0	10.6	5.3	—
Mathematical sciences	100.0	94.9	23.5	52.9	11.8	6.6	5.1	—
Computer science	100.0	97.6	12.0	42.2	34.9	8.4	2.4	—
Agricultural sciences	100.0	99.0	39.6	22.9	21.9	14.6	1.0	—
Biological sciences	100.0	96.6	74.4	9.8	6.6	5.7	3.0	0.4
Psychology	100.0	98.9	39.0	21.1	14.8	24.0	1.0	0.1
Social sciences	100.0	94.9	13.4	57.1	6.7	17.6	5.0	0.1
Engineering	100.0	95.7	22.8	18.8	46.2	8.0	3.7	0.6
Aeronautical/astronautical	100.0	100.0	60.0	—	20.0	20.0	—	—
Chemical	100.0	98.1	22.2	11.1	61.1	3.7	1.9	—
Civil	100.0	100.0	22.0	36.6	26.8	14.6	—	—
Electrical	100.0	97.9	14.6	10.4	58.3	14.6	—	2.1
Industrial	100.0	100.0	4.2	37.5	50.0	8.3	—	—
Materials/metallurgical	100.0	86.5	16.2	2.7	59.5	8.1	13.5	—
Mechanical	100.0	91.4	14.3	31.4	40.0	5.7	5.7	2.9
Other engineering	100.0	95.1	38.3	17.3	35.8	3.7	4.9	—
Total non-S&E	100.0	97.4	6.3	55.2	6.9	29.0	2.0	0.5

— less than 0.1

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 5-29

Science and engineering postdoctoral fellows, by sex and field: 1990–99

Sex and field	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	Number									
All S&E fellows, all fields	21,819	22,870	23,900	24,680	25,826	26,186	26,597	27,015	27,515	28,662
Physical sciences	5,592	5,722	5,792	5,669	5,884	5,851	5,828	5,927	5,964	6,107
Earth, atmospheric, and ocean sciences	594	625	692	765	824	845	861	938	897	921
Mathematical sciences	249	206	201	224	239	262	326	304	274	348
Computer science	71	120	145	164	185	213	250	318	368	330
Agricultural sciences	524	565	630	698	705	701	677	701	666	717
Biological sciences	11,944	12,491	13,194	13,818	14,448	14,715	14,943	14,940	15,517	15,916
Psychology	464	508	525	521	551	582	594	574	612	709
Social sciences	438	379	361	378	390	376	444	362	389	451
Engineering	1,943	2,254	2,360	2,443	2,600	2,641	2,674	2,951	2,828	3,163
Female S&E fellows, all fields	5,642	5,959	6,436	6,785	7,314	7,510	7,635	7,831	8,223	8,623
Physical sciences	795	836	839	847	882	940	933	1,037	1,044	1,036
Earth, atmospheric, and ocean sciences	94	111	154	163	174	184	183	220	227	218
Mathematical sciences	30	29	26	33	47	45	50	40	38	73
Computer science	9	20	32	29	31	29	48	46	62	58
Agricultural sciences	138	131	157	171	184	169	162	190	176	197
Biological sciences	3,994	4,209	4,602	4,897	5,261	5,380	5,458	5,528	5,828	6,011
Psychology	221	237	250	225	246	281	286	282	314	370
Social sciences	155	148	126	138	155	162	201	144	152	196
Engineering	206	238	250	282	334	320	314	344	382	464
	Percent female									
All S&E fields	25.9	26.1	26.9	27.5	28.3	28.7	28.7	29.0	29.9	30.1
Physical sciences	14.2	14.6	14.5	14.9	15.0	16.1	16.0	17.5	17.5	17.0
Earth, atmospheric, and ocean sciences	15.8	17.8	22.3	21.3	21.1	21.8	21.3	23.5	25.3	23.7
Mathematical sciences	12.0	14.1	12.9	14.7	19.7	17.2	15.3	13.2	13.9	21.0
Computer science	12.7	16.7	22.1	17.7	16.8	13.6	19.2	14.5	16.8	17.6
Agricultural sciences	26.3	23.2	24.9	24.5	26.1	24.1	23.9	27.1	26.4	27.5
Biological sciences	33.4	33.7	34.9	35.4	36.4	36.6	36.5	37.0	37.6	37.8
Psychology	47.6	46.7	47.6	43.2	44.6	48.3	48.1	49.1	51.3	52.2
Social sciences	35.4	39.1	34.9	36.5	39.7	43.1	45.3	39.8	39.1	43.5
Engineering	10.6	10.6	10.6	11.5	12.8	12.1	11.7	11.7	13.5	14.7

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Graduate Students and Postdoctorates in Science and Engineering, various years.

Appendix table 5-30

S&E doctorate recipients with definite postgraduate plans, by race/ethnicity: 1999

(Percent distribution)

Race/ethnicity	Definite plans	In the United States					Abroad	Location unknown
		Total	Postdoctoral study	Academic employment	Industry employment	Other		
Total	100.0	96.1	39.6	21.8	22.0	12.7	3.6	0.3
White, non-Hispanic	100.0	96.3	39.4	22.6	21.2	13.1	3.4	0.3
Asian/Pacific Islander	100.0	95.7	45.3	11.1	31.6	7.7	3.7	0.6
Black, non-Hispanic	100.0	97.3	31.7	32.9	16.2	16.4	2.7	0.0
Hispanic	100.0	94.4	39.8	23.7	18.1	12.8	5.3	0.2
American Indian/Alaskan Native	100.0	89.2	32.3	21.5	15.4	20.0	10.8	0.0
Unknown race/ethnicity	100.0	90.1	30.4	20.5	24.0	15.2	8.8	1.2

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 5-31

S&E doctorate recipients with definite postgraduate plans, by race/ethnicity: 1999

(Percent distribution)

Disability status	Definite plans	In the United States Total	Postdoctoral study	Academic employment	Industry employment	Other	Abroad	Location unknown
Total	100.0	96.1	39.6	21.8	22.0	12.7	3.6	0.3
Without disabilities	100.0	96.1	39.7	21.7	22.1	12.6	3.6	0.3
With disabilities	100.0	95.6	34.4	23.9	17.8	19.4	4.4	0.0

NOTE: Data are for U.S. citizens and permanent residents only.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Earned Doctorates.

Appendix table 6-1

Employed scientists and engineers, by broad occupation, highest degree level, sex, and race/ethnicity: 1993 and 1999

Page 1 of 2

Highest degree level and occupation	All employed scientists and engineers[a]	Males	Females	Whites, non-Hispanic	Asians/Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/Alaskan Natives
1993: all degree levels,[b] all occupations	9,793,500	6,729,500	3,064,100	8,303,300	650,800	503,100	306,800	25,000
S&E occupations	3,303,400	2,547,900	755,500	2,777,500	299,300	119,400	97,200	7,600
Science occupations	1,912,300	1,276,400	635,900	1,612,100	160,500	79,800	53,800	4,800
Computer/math scientists	991,500	686,100	305,400	827,700	90,600	44,500	26,300	1,800
Life and related scientists	322,300	212,600	109,700	269,300	31,300	10,400	10,100	700
Physical and related scientists	280,900	221,100	59,900	237,600	27,200	8,000	7,100	800
Social and related scientists	317,600	156,600	160,900	277,500	11,400	16,800	10,300	1,600
Engineering occupations	1,391,100	1,271,500	119,600	1,165,400	138,800	39,700	43,400	2,800
Non-S&E occupations	6,490,100	4,181,600	2,308,600	5,525,800	351,500	383,700	209,600	17,400
Bachelor's, all occupations	5,727,200	3,876,700	1,850,500	4,866,300	330,900	320,100	191,500	15,200
S&E occupations	1,980,300	1,553,200	427,200	1,700,100	127,600	83,400	62,600	4,600
Science occupations	1,007,000	664,900	342,100	859,100	61,000	52,000	31,100	2,600
Computer/math scientists	676,200	457,700	218,500	574,800	45,300	34,500	19,800	1,300
Life and related scientists	131,600	82,200	49,500	114,200	6,100	5,800	4,900	300
Physical and related scientists	130,700	96,900	33,700	113,500	7,300	5,700	3,500	500
Social and related scientists	68,500	28,200	40,300	56,600	2,300	6,000	3,000	600
Engineering occupations	973,300	888,200	85,100	841,000	66,600	31,400	31,500	2,000
Non-S&E occupations	3,746,900	2,323,600	1,423,300	3,166,200	203,300	236,700	128,900	10,600
Master's, all occupations	2,575,600	1,688,100	887,500	2,155,400	210,700	129,400	73,100	6,300
S&E occupations	891,300	657,300	234,000	725,900	113,300	26,000	24,200	1,500
Science occupations	541,400	338,200	203,300	449,400	58,900	18,800	13,500	700
Computer/math scientists	263,600	185,400	78,200	212,100	37,600	8,300	5,300	300
Life and related scientists	70,400	40,500	29,900	57,400	8,300	2,700	1,900	S
Physical and related scientists	72,600	55,600	17,000	61,100	8,200	1,200	1,900	S
Social and related scientists	134,900	56,600	78,200	118,800	4,700	6,600	4,400	300
Engineering occupations	349,900	319,100	30,800	276,600	54,400	7,200	10,700	700
Non-S&E occupations	1,684,300	1,030,800	653,500	1,429,500	97,500	103,300	48,800	4,800
Doctorate, all occupations	634,800	499,400	135,400	520,800	74,300	20,500	16,800	2,200
S&E occupations	395,600	311,500	84,100	321,300	54,800	9,000	9,100	1,400
Science occupations	330,500	250,000	80,600	275,900	37,400	8,000	8,000	1,300
Computer/math scientists	48,700	40,400	8,300	38,500	7,600	1,200	1,300	200
Life and related scientists	98,100	73,300	24,800	79,900	13,900	1,500	2,400	300
Physical and related scientists	77,000	68,300	8,700	62,400	11,600	1,100	1,700	200
Social and related scientists	106,700	68,000	38,700	95,100	4,300	4,100	2,600	700
Engineering occupations	65,000	61,500	3,500	45,400	17,500	1,000	1,100	100
Non-S&E occupations	239,200	187,900	51,300	199,500	19,500	11,500	7,800	700

See explanatory information and SOURCE at end of table

Appendix table 6-1

Employed scientists and engineers, by broad occupation, highest degree level, sex, and race/ethnicity: 1993 and 1999

Page 2 of 2

Highest degree level and occupation	All employed scientists and engineers[a]	Males	Females	Whites, non-Hispanic	Asians/Pacific Islanders	Blacks, non-Hispanic	Hispanics	American Indians/Alaskan Natives
1999: all degree levels,[b] all occupations	10,981,600	7,171,500	3,810,200	9,124,600	805,900	597,100	417,200	33,300
S&E occupations	3,540,800	2,705,000	835,800	2,896,600	390,500	121,600	120,900	10,600
Science occupations	2,170,500	1,464,800	705,800	1,774,200	233,900	84,000	71,800	6,500
Computer/math scientists	1,167,400	850,600	316,700	922,200	153,600	51,400	37,600	2,700
Life and related scientists	341,900	217,500	124,400	285,100	37,700	6,600	10,900	1,500
Physical and related scientists	297,900	229,400	68,400	252,500	27,800	8,800	7,800	900
Social and related scientists	363,400	167,300	196,200	314,400	14,800	17,200	15,500	1,500
Engineering occupations	1,370,300	1,240,200	130,000	1,122,400	156,600	37,700	49,100	4,100
Non-S&E occupations	7,440,800	4,466,400	2,974,300	6,228,100	415,400	475,500	296,300	22,700
Bachelor's, all occupations	6,350,100	4,084,400	2,265,700	5,300,500	394,800	362,000	268,800	22,000
S&E occupations	1,994,400	1,564,700	429,700	1,680,900	158,300	73,900	74,800	6,200
Science occupations	1,087,100	744,300	342,800	908,100	87,700	46,600	41,500	3,100
Computer/math scientists	740,500	538,900	201,600	612,200	65,400	34,200	27,000	1,700
Life and related scientists	135,500	76,900	58,600	117,100	9,800	2,000	5,700	900
Physical and related scientists	139,600	101,700	38,000	120,600	8,400	5,800	4,600	S
Social and related scientists	71,400	26,800	44,600	58,300	4,000	4,600	4,200	S
Engineering occupations	907,400	820,400	86,900	772,800	70,600	27,300	33,300	3,100
Non-S&E occupations	4,355,700	2,519,700	1,836,000	3,619,600	236,500	288,100	194,000	15,800
Master's, all occupations	2,982,000	1,871,200	1,110,800	2,440,500	266,600	168,600	96,000	7,700
S&E occupations	1,032,100	751,200	280,900	807,200	153,000	35,900	32,800	3,000
Science occupations	655,500	411,400	244,200	516,000	91,100	27,300	19,100	2,100
Computer/math scientists	354,100	253,700	100,500	256,200	72,900	15,200	8,800	900
Life and related scientists	72,500	44,000	28,500	61,200	7,100	2,200	1,800	300
Physical and related scientists	73,000	53,700	19,300	62,300	7,100	1,800	1,400	400
Social and related scientists	155,900	60,000	95,900	136,200	4,000	8,100	7,100	500
Engineering occupations	376,500	339,800	36,700	291,300	62,000	8,600	13,600	900
Non-S&E occupations	1,949,900	1,120,000	829,900	1,633,200	113,600	132,700	65,300	4,700
Doctorate, all occupations	736,700	552,200	184,500	583,300	103,800	25,800	21,200	2,000
S&E occupations	484,100	368,900	115,200	381,600	77,000	11,000	12,900	1,400
Science occupations	399,900	290,900	109,100	325,100	53,100	9,300	11,000	1,300
Computer/math scientists	67,100	54,900	12,200	49,500	14,500	1,400	1,600	S
Life and related scientists	121,100	86,200	34,900	95,600	19,500	2,100	3,500	400
Physical and related scientists	84,300	73,700	11,200	69,200	12,300	1,200	1,800	300
Social and related scientists	126,900	76,100	50,800	110,800	6,800	4,500	4,100	600
Engineering occupations	84,200	78,000	6,200	56,500	23,900	1,700	1,900	100
Non-S&E occupations	252,600	183,400	69,300	201,700	26,800	14,800	8,300	600

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

[b] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-2

Employed scientists and engineers in the United States, by occupation, race/ethnicity, and sex: 1999

Page 1 of 2

Occupation	Total[a]		White		Asian/Pacific Islander		Black		Hispanic		American Indian/ Alaskan Native	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
All occupations	7,171,500	3,810,200	6,083,500	3,041,100	536,700	269,200	284,100	313,000	243,800	173,400	20,900	12,400
S&E occupations	2,705,000	835,800	2,236,600	660,000	298,100	92,400	75,200	46,400	86,700	34,200	7,800	2,700
Computer/mathematical scientists	850,600	316,700	684,400	237,800	109,500	44,000	29,700	21,700	25,600	12,000	1,400	1,300
Computer/information scientists	778,800	279,300	624,900	208,200	102,400	41,100	26,400	18,600	23,800	10,200	1,300	1,200
Mathematical scientists	24,000	12,300	19,400	9,600	2,400	1,300	1,400	700	700	800	S	S
Postsecondary computer/mathematics teachers	47,800	25,100	40,000	20,000	4,700	1,700	1,900	2,400	1,200	1,000	100	100
Life and related scientists	217,500	124,400	184,300	100,900	22,300	15,300	3,800	2,800	6,000	4,900	1,000	500
Agricultural/food scientists	30,800	8,900	27,300	7,500	2,000	500	1,100	100	400	800	S	S
Biological scientists	119,800	86,800	96,200	68,300	17,000	13,200	1,700	1,700	4,100	3,300	700	300
Environmental life scientists	15,600	4,200	15,300	3,800	S	S	S	S	S	S	200	S
Postsecondary life science teachers	51,300	24,500	45,500	21,200	3,300	1,400	1,000	1,100	1,500	700	100	100
Physical and related scientists	229,400	68,400	197,500	55,000	19,500	8,300	5,800	3,000	5,900	1,900	700	200
Chemists	84,800	36,900	69,100	27,300	9,100	6,500	3,800	1,900	2,800	1,300	100	S
Earth scientists/geologists/oceanographers	59,800	13,000	54,500	12,000	3,100	200	400	400	1,600	300	200	S
Physicists and astronomers	27,400	3,000	23,900	2,300	2,700	300	400	400	300	S	100	S
Other physical scientists	17,000	5,200	15,500	4,300	800	600	300	S	300	S	S	S
Postsecondary physical science teachers	40,400	10,300	34,500	9,100	3,800	700	800	200	1,000	300	200	S
Social and related scientists	167,300	196,200	146,900	167,500	7,500	7,300	6,600	10,600	5,200	10,300	1,000	400
Economists	23,800	11,600	21,200	8,400	1,600	2,100	500	200	500	900	S	S
Political scientists	5,600	6,000	4,800	4,600	S	S	S	S	500	800	S	S
Psychologists	71,900	125,100	65,700	110,400	700	2,300	3,100	6,200	2,200	5,900	200	300
Sociologists/anthropologists	8,400	9,200	7,400	8,000	200	300	600	600	100	300	S	S
Other social scientists	4,900	8,700	3,900	5,800	600	1,000	S	1,100	S	800	S	S
Postsecondary social science teachers	52,600	35,600	44,000	30,300	4,200	1,600	2,200	2,000	1,400	1,600	700	100

See explanatory information and SOURCE at end of table.

Appendix table 6-2

Employed scientists and engineers in the United States, by occupation, race/ethnicity, and sex: 1999

Page 2 of 2

Occupation	Total[a]		White		Asian/Pacific Islander		Black		Hispanic		American Indian/ Alaskan Native	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Engineers	1,240,200	130,000	1,023,500	98,900	139,100	17,500	29,400	8,200	44,000	5,100	3,700	300
Aerospace engineers	62,800	4,600	53,300	3,600	6,600	800	1,500	100	1,200	100	100	S
Chemical engineers	67,200	12,700	54,000	9,000	9,000	2,200	1,300	1,200	2,700	300	200	S
Civil engineers	201,200	22,500	163,900	17,400	22,500	3,100	4,200	600	9,800	1,200	700	S
Electrical engineers	339,700	22,600	266,900	14,900	50,000	5,200	8,600	1,800	13,300	700	800	S
Industrial engineers	68,800	12,300	58,900	10,100	4,600	500	2,400	1,000	2,600	700	400	S
Mechanical engineers	251,200	14,600	211,600	12,100	25,300	1,300	6,000	1,000	7,100	100	1,000	S
Other engineers	221,900	36,800	194,300	28,500	16,200	3,900	4,400	2,400	6,300	1,700	600	200
Postsecondary engineering teachers	27,500	3,900	20,500	3,300	5,100	400	1,100	100	800	200	S	S
Non-S&E occupations	4,466,400	2,974,300	3,846,900	2,381,100	238,600	176,800	208,900	266,600	157,100	139,200	13,000	9,700
Managers and administrators	1,429,100	606,500	1,258,000	482,900	71,400	35,000	57,000	58,900	38,400	27,700	3,500	2,000
Health-related occupations	465,400	382,700	391,800	306,800	37,900	31,900	17,300	26,500	17,300	16,300	800	700
Teachers, except S&E postsecondary teachers	258,100	425,600	221,300	352,300	5,800	12,700	17,300	38,900	12,800	20,400	900	1,100
Non-S&E postsecondary teachers	68,900	55,100	56,300	45,300	5,800	3,900	3,900	3,700	2,300	1,900	300	300
Social services/related occupations	183,600	292,200	143,300	219,800	8,100	5,900	19,900	45,000	11,000	19,800	1,400	1,700
Technologists and technicians	274,500	112,600	224,200	81,700	30,400	16,300	11,200	10,600	7,900	3,600	800	S
Sales and marketing occupations	639,800	304,000	559,700	257,300	33,800	19,000	24,200	17,200	19,700	9,600	2,000	1,000
Art, humanities, and related occupations	81,600	83,300	73,300	73,800	3,000	3,700	1,800	3,500	3,100	2,300	S	S
Other non-S&E occupations	1,065,500	712,300	919,000	561,200	42,500	48,500	56,300	62,100	44,500	37,600	3,100	2,600

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-3

Employed scientists and engineers, by broad occupation, highest degree level, disability status, and type of disability: 1993 and 1999

Page 1 of 2

Highest degree level and occupation	All employed scientists and engineers	Persons without disabilities	Persons with disabilities				
			Any disability	Seeing	Hearing	Walking	Lifting
1993: all degree levels,[a] all occupations	9,793,500	9,245,000	548,500	228,100	240,300	76,400	115,200
S&E occupations	3,303,400	3,137,300	166,100	68,600	77,700	18,800	29,400
Science occupations	1,912,300	1,820,400	91,900	38,500	36,500	12,900	20,900
Computer/math scientists	991,500	942,300	49,200	21,600	19,600	7,400	9,900
Life and related scientists	322,300	307,500	14,700	4,800	7,700	1,500	2,800
Physical and related scientists	280,900	269,700	11,200	5,000	4,900	1,000	2,100
Social and related scientists	317,600	300,900	16,700	7,100	4,400	3,100	6,000
Engineering occupations	1,391,100	1,317,000	74,100	30,100	41,200	5,800	8,500
Non-S&E occupations	6,490,100	6,107,700	382,500	159,500	162,600	57,600	85,800
Bachelor's, all occupations	5,727,200	5,393,800	333,400	142,000	151,200	41,200	61,300
S&E occupations	1,980,300	1,878,000	102,300	42,500	50,500	10,500	15,000
Science occupations	1,007,000	959,600	47,500	20,300	20,100	6,000	8,600
Computer/math scientists	676,200	642,700	33,500	15,600	14,000	4,600	4,800
Life and related scientists	131,600	126,000	5,600	1,600	3,300	300	900
Physical and related scientists	130,700	125,800	4,800	1,900	2,400	300	1,000
Social and related scientists	68,500	65,000	3,500	1,300	S	800	1,900
Engineering occupations	973,300	918,500	54,800	22,200	30,400	4,500	6,400
Non-S&E occupations	3,746,900	3,515,800	231,100	99,500	100,700	30,700	46,300
Master's, all occupations	2,575,600	2,429,400	146,100	59,100	59,700	22,900	38,300
S&E occupations	891,300	848,700	42,600	18,800	17,500	5,000	10,000
Science occupations	541,400	514,500	26,900	11,900	8,900	4,200	8,600
Computer/math scientists	263,600	250,300	13,300	5,400	4,600	2,300	4,500
Life and related scientists	70,400	66,600	3,800	1,600	1,500	500	1,000
Physical and related scientists	72,600	69,500	3,000	1,600	1,100	200	600
Social and related scientists	134,900	128,000	6,800	3,300	1,600	1,200	2,500
Engineering occupations	349,900	334,200	15,700	6,900	8,600	800	1,500
Non-S&E occupations	1,684,300	1,580,700	103,500	40,300	42,300	17,900	28,300
Doctorate, all occupations	634,800	602,300	32,500	12,300	14,400	4,700	7,300
S&E occupations	395,600	376,000	19,500	7,000	8,900	2,900	3,800
Science occupations	330,500	314,400	16,100	6,000	6,900	2,500	3,200
Computer/math scientists	48,700	46,300	2,400	600	1,000	500	700
Life and related scientists	98,100	93,900	4,200	1,200	2,300	500	600
Physical and related scientists	77,000	73,700	3,300	1,500	1,300	400	400
Social and related scientists	106,700	100,500	6,200	2,600	2,200	1,100	1,500
Engineering occupations	65,000	61,600	3,400	1,000	2,000	400	600
Non-S&E occupations	239,200	226,200	13,000	5,400	5,500	1,800	3,500

See explanatory information and SOURCE at end of table.

Appendix table 6-3

Employed scientists and engineers, by broad occupation, highest degree level, disability status, and type of disability: 1993 and 1999

Page 2 of 2

Highest degree level and occupation	All employed scientists and engineers	Persons without disabilities	Persons with disabilities: Any disability	Seeing	Hearing	Walking	Lifting
1999: all degree levels,[a] all occupations	10,981,600	10,237,000	744,600	345,700	311,600	101,400	148,200
S&E occupations	3,540,800	3,334,900	206,000	89,400	95,500	26,700	38,600
Science occupations	2,170,500	2,045,400	125,200	54,400	52,200	16,900	26,700
Computer/math scientists	1,167,400	1,099,400	67,900	32,200	25,800	8,100	14,400
Life and related scientists	341,900	321,700	20,200	8,000	11,500	2,000	2,600
Physical and related scientists	297,900	281,400	16,500	6,600	7,400	2,500	3,300
Social and related scientists	363,400	342,900	20,600	7,600	7,500	4,400	6,400
Engineering occupations	1,370,300	1,289,500	80,800	35,000	43,200	9,900	11,900
Non-S&E occupations	7,440,800	6,902,200	538,600	256,300	216,100	74,600	109,600
Bachelor's, all occupations	6,350,100	5,906,800	443,300	208,200	191,400	53,000	80,800
S&E occupations	1,994,400	1,877,600	116,800	54,500	55,600	12,300	18,600
Science occupations	1,087,100	1,027,300	59,700	28,700	25,000	5,800	10,500
Computer/math scientists	740,500	696,900	43,600	21,200	17,500	5,100	7,900
Life and related scientists	135,500	127,500	8,000	4,000	4,500	S	S
Physical and related scientists	139,600	132,900	6,700	3,100	2,400	600	1,700
Social and related scientists	71,400	70,100	1,400	S	S	S	S
Engineering occupations	907,400	850,300	57,100	25,800	30,600	6,500	8,100
Non-S&E occupations	4,355,700	4,029,200	326,400	153,700	135,800	40,800	62,300
Master's, all occupations	2,982,000	2,769,400	212,600	97,700	82,500	33,200	48,600
S&E occupations	1,032,100	975,200	56,800	21,800	25,200	8,600	13,300
Science occupations	655,500	617,800	37,800	14,500	15,000	6,100	10,200
Computer/math scientists	354,100	334,200	19,900	9,100	6,500	2,400	5,600
Life and related scientists	72,500	68,800	3,800	S	2,700	500	S
Physical and related scientists	73,000	67,900	5,100	1,700	2,500	1,100	1,000
Social and related scientists	155,900	146,900	9,000	3,200	3,300	2,000	3,000
Engineering occupations	376,500	357,500	19,100	7,400	10,200	2,500	3,000
Non-S&E occupations	1,949,900	1,794,100	155,700	75,900	57,400	24,600	35,300
Doctorate, all occupations	736,700	687,500	49,200	21,500	22,000	8,200	10,000
S&E occupations	484,100	453,200	30,900	12,700	14,000	5,100	5,900
Science occupations	399,900	373,700	26,300	11,000	11,600	4,300	5,200
Computer/math scientists	67,100	62,700	4,400	2,000	1,700	500	900
Life and related scientists	121,100	113,700	7,400	3,300	3,900	900	900
Physical and related scientists	84,900	80,100	4,800	1,700	2,500	700	700
Social and related scientists	126,900	117,200	9,700	4,000	3,400	2,200	2,700
Engineering occupations	84,200	79,600	4,600	1,800	2,500	800	800
Non-S&E occupations	252,600	234,300	18,300	8,800	7,900	3,100	4,100

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-4

Employment status of scientists and engineers, by age group, sex, race/ethnicity, and disability status: 1999

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Age group, sex, race/ethnicity,[a] and disability status	Total	Employed				Not employed/ seeking employment	Retired	Not employed/ not seeking employment
		Total	Full-time	Part-time	Postdoctoral appointment			
All ages	13,050,800	10,981,600	9,770,200	1,187,400	24,000	194,400	1,092,900	781,900
Male	8,304,100	7,171,500	6,698,500	458,600	14,400	117,700	823,600	191,400
Female	4,746,700	3,810,200	3,071,700	728,800	9,700	76,700	269,300	590,500
White, non-Hispanic	10,931,000	9,124,600	8,080,700	1,028,500	15,400	153,600	994,000	658,800
Asian/Pacific Islander	919,900	805,900	734,300	64,800	6,800	16,200	34,300	63,500
Black, non-Hispanic	677,500	597,100	548,400	48,000	700	12,500	44,500	23,300
Hispanic	476,100	417,200	373,000	43,100	1,100	11,100	16,600	31,200
American Indian/Alaskan Native	42,000	33,300	30,400	2,800	100	1,000	3,400	4,400
Without disabilities	11,943,400	10,237,000	9,130,700	1,082,800	23,500	167,400	845,700	693,400
With disabilities	1,107,300	744,600	639,500	104,600	500	27,000	247,200	88,500
29 or younger	1,772,200	1,534,200	1,365,300	166,900	2,000	37,400	S	199,800
Male	880,700	777,300	707,700	68,600	1,000	17,800	S	85,000
Female	891,500	756,800	657,600	98,200	1,000	19,500	S	114,800
White, non-Hispanic	1,361,100	1,190,600	1,057,400	131,800	1,500	26,600	S	143,300
Asian/Pacific Islander	183,200	147,200	134,000	12,800	500	3,900	S	31,700
Black, non-Hispanic	109,400	95,800	87,300	8,400	S	3,600	S	10,100
Hispanic	109,200	93,100	79,900	13,200	S	3,100	S	13,000
American Indian/Alaskan Native	9,400	7,400	6,700	700	S	S	S	1,800
Without disabilities	1,734,500	1,501,400	1,335,300	164,100	2,000	36,700	S	195,500
With disabilities	37,700	32,700	29,900	2,800	S	600	S	4,300
30 to 39	2,949,800	2,718,200	2,470,700	229,800	17,600	33,300	3,400	195,000
Male	1,750,300	1,706,200	1,646,700	48,800	10,700	15,900	S	28,000
Female	1,199,500	1,012,000	824,000	181,000	7,000	17,400	3,100	167,000
White, non-Hispanic	2,395,800	2,202,400	1,994,600	196,400	11,300	23,400	3,200	166,800
Asian/Pacific Islander	257,100	239,200	218,000	16,200	5,000	4,700	S	13,000
Black, non-Hispanic	150,600	142,600	135,300	6,800	400	2,600	S	5,400
Hispanic	136,300	125,200	114,900	9,500	800	2,500	S	8,600
American Indian/Alaskan Native	8,800	8,000	7,100	700	100	S	S	800
Without disabilities	2,860,100	2,640,300	2,399,700	223,300	17,400	30,400	2,800	186,500
With disabilities	89,700	77,800	71,000	6,500	300	2,900	S	8,500
40 to 49	3,684,600	3,426,400	3,097,900	324,700	3,700	44,800	16,700	196,700
Male	2,310,900	2,250,200	2,181,300	66,500	2,400	25,700	7,400	27,500
Female	1,373,700	1,176,100	916,600	258,200	1,300	19,100	9,300	169,200
White, non-Hispanic	3,108,700	2,881,400	2,593,500	285,800	2,100	37,000	14,200	176,000
Asian/Pacific Islander	237,000	223,200	204,400	17,500	1,200	3,100	1,200	9,500
Black, non-Hispanic	197,700	191,300	180,500	10,600	200	2,000	1,000	3,400
Hispanic	128,700	119,500	109,300	10,000	200	2,600	S	6,400
American Indian/Alaskan Native	10,400	9,300	8,500	700	S	200	S	1,000
Without disabilities	3,412,300	3,189,700	2,881,100	305,000	3,600	37,100	14,400	171,100
With disabilities	272,200	236,700	216,800	19,700	100	7,700	2,300	25,600

See explanatory information and SOURCE at end of table.

Appendix table 6-4

Employment status of scientists and engineers, by age group, sex, race/ethnicity, and disability status: 1999

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Age group, sex, race/ethnicity,[a] and disability status	Total	Employed				Not employed/ seeking employment	Retired	Not employed/ not seeking employment
		Total	Full-time	Part-time	Postdoctoral appointment			
50 or older	4,644,200	3,302,900	2,836,300	465,900	700	78,900	1,072,000	190,400
Male	3,362,200	2,437,800	2,162,800	274,600	300	58,200	815,500	50,800
Female	1,282,000	865,200	673,500	191,300	300	20,700	256,600	139,600
White, non-Hispanic	4,065,500	2,850,200	2,435,200	414,400	600	66,500	976,100	172,700
Asian/Pacific Islander	242,700	196,300	177,900	18,400	S	4,500	32,700	9,200
Black, non-Hispanic	219,800	167,400	145,300	22,100	S	4,300	43,500	4,500
Hispanic	102,000	79,400	68,900	10,400	S	3,000	16,400	3,300
American Indian/Alaskan Native	13,300	8,700	8,100	600	S	500	3,400	800
Without disabilities	3,936,500	2,905,500	2,514,600	390,300	600	63,100	827,600	140,300
With disabilities	707,700	397,400	321,700	75,600	100	15,800	244,400	50,100

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-5

Scientists and engineers who are unemployed or out of the labor force, by reason for not working, sex, race/ethnicity, and disability status: 1999

Reason for not working	All scientists and engineers	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
	Number									
Total not working	2,069,200	1,132,600	936,600	1,806,400	114,000	80,400	58,900	8,700	1,706,400	362,700
Family responsibilities	368,900	31,200	337,700	320,700	22,300	8,900	13,600	2,800	341,900	27,000
Chronic illness or permanent disability	139,900	81,300	58,600	118,200	4,200	11,200	5,200	1,000	44,600	95,300
Suitable job not available	121,400	65,700	55,700	94,700	12,300	6,100	7,700	600	106,900	14,500
Did not need or want to work	454,200	130,200	324,000	404,500	26,400	9,700	12,600	1,000	416,300	37,900
Retired	1,115,800	841,800	274,000	1,014,500	35,100	45,700	17,300	3,400	863,100	252,700
Student	248,600	117,700	130,900	177,000	38,700	14,500	17,000	1,500	239,100	9,500
On layoff from a job	81,200	57,600	23,500	64,700	6,400	5,100	4,500	500	67,900	13,200
Other reason	70,200	26,300	43,900	57,000	7,600	2,900	2,200	600	62,700	7,500
	Percent									
Total not working	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Family responsibilities	17.8	2.8	36.1	17.8	19.5	11.0	23.0	32.0	20.0	7.5
Chronic illness or permanent disability	6.8	7.2	6.3	6.5	3.7	14.0	8.8	11.3	2.6	26.3
Suitable job not available	5.9	5.8	5.9	5.2	10.8	7.6	13.0	7.0	6.3	4.0
Did not need or want to work	22.0	11.5	34.6	22.4	23.2	12.1	21.4	11.5	24.4	10.4
Retired	53.9	74.3	29.3	56.2	30.8	56.8	29.3	38.8	50.6	69.7
Student	12.0	10.4	14.0	9.8	33.9	18.0	28.9	17.2	14.0	2.6
On layoff from a job	3.9	5.1	2.5	3.6	5.6	6.4	7.7	5.3	4.0	3.6
Other reason	3.4	2.3	4.7	3.2	6.7	3.6	3.7	6.7	3.7	2.1

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding and because respondents could select more than one reason.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Women, Minorities, and Persons With Disabilities in Science and Engineering: 2002

Appendix table 6-6

Preference for full-time employment and reasons for working part time of scientists and engineers employed part time, by occupation, sex, race/ethnicity, and disability status: 1999

Occupation, preference for full-time employment, and reason for part-time employment	Total employed part time	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
All occupations	1,187,400	458,600	728,800	1,028,500	64,800	48,000	43,100	2,800	1,082,800	104,600
S&E occupation	272,500	134,600	137,900	236,900	17,000	8,300	9,500	700	251,700	20,700
Non-S&E occupation	914,900	324,000	590,900	791,600	47,900	39,700	33,700	2,000	831,000	83,900
Preference for full-time employment										
Did not want full-time employment	1,057,800	390,400	667,400	926,300	52,600	39,900	36,500	2,400	967,900	90,000
S&E occupation	241,800	114,800	127,000	211,600	15,000	7,200	7,400	600	224,300	17,400
Non-S&E occupation	816,100	275,700	540,400	714,700	37,700	32,700	29,100	1,800	743,600	72,500
Wanted full-time employment	129,500	68,100	61,400	102,200	12,200	8,100	6,600	400	114,900	14,600
S&E occupation	30,700	19,800	10,900	25,400	2,000	1,100	2,000	S	27,400	3,300
Non-S&E occupation	98,800	48,300	50,500	76,900	10,200	6,900	4,600	S	87,500	11,400
Reasons for part-time employment										
Family responsibilities	401,600	53,500	348,100	348,800	26,300	11,800	13,900	800	382,900	18,800
S&E occupation	76,400	14,200	62,200	67,200	5,100	1,200	2,900	S	73,600	2,800
Non-S&E occupation	325,200	39,300	285,900	281,600	21,200	10,600	11,000	800	309,300	15,900
Chronic illness or permanent disability	45,000	19,800	25,200	38,000	2,200	1,600	3,100	S	27,800	17,200
S&E occupation	6,500	3,100	3,500	6,000	200	S	400	S	3,200	3,400
Non-S&E occupation	38,500	16,800	21,700	32,100	2,100	1,500	2,700	S	24,700	13,800
Did not need or want to work full time	635,400	206,800	428,600	563,100	30,500	21,600	18,700	1,300	596,400	39,000
S&E occupation	127,100	54,300	72,800	111,600	7,500	3,800	3,800	300	120,100	7,000
Non-S&E occupation	508,300	152,400	355,900	451,600	23,000	17,800	14,900	1,000	476,400	31,900
Suitable full-time job not available	134,300	63,200	71,100	107,300	11,500	8,000	6,900	600	122,000	12,300
S&E occupation	30,800	18,800	12,100	25,000	3,200	1,000	1,500	S	28,400	2,400
Non-S&E occupation	103,500	44,400	59,000	82,300	8,300	7,000	5,400	500	93,600	9,800
Student	200,600	91,400	109,200	154,700	18,900	11,000	15,300	800	195,700	4,900
S&E occupation	80,700	43,300	37,400	62,900	8,800	4,500	4,100	S	79,000	1,700
Non-S&E occupation	119,900	48,100	71,800	91,800	10,100	6,500	11,100	400	116,700	3,200
Retired	248,200	186,800	61,400	223,500	7,800	12,400	4,100	300	203,100	45,100
S&E occupation	59,300	51,300	8,000	54,800	2,100	1,400	900	S	50,000	9,300
Non-S&E occupation	188,900	135,400	53,400	168,700	5,700	11,000	3,100	S	153,100	35,800
Other reason	94,500	42,100	52,400	78,100	6,700	5,700	3,600	300	84,500	10,000
S&E occupation	19,800	11,400	8,400	16,300	1,700	1,000	700	100	17,700	2,100
Non-S&E occupation	74,700	30,700	44,000	61,800	5,000	4,700	3,000	S	66,800	7,800

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding and because respondents could select more than one reason.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-7
Employed scientists and engineers in the United States, by occupation, highest degree, and sex: 1999

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Occupation	All degrees[a]			Bachelor's			Master's			Doctorate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
All occupations	10,981,600	7,171,500	3,810,200	6,350,100	4,084,400	2,265,700	2,982,000	1,871,200	1,110,800	736,700	552,200	184,500
S&E occupations	3,540,800	2,705,000	835,800	1,994,400	1,564,700	429,700	1,032,100	751,200	280,900	484,100	368,900	115,200
Computer/mathematical scientists	1,167,400	850,600	316,700	740,500	538,900	201,600	354,100	253,700	100,500	67,100	54,900	12,200
Computer/information scientists	1,058,100	778,800	279,300	715,400	522,900	192,500	304,800	225,300	79,500	32,400	27,600	4,800
Mathematical scientists	36,200	24,000	12,300	12,400	7,500	4,900	16,000	10,600	5,400	7,900	5,800	2,000
Postsecondary computer/ mathematics teachers	73,000	47,800	25,100	12,700	8,600	4,200	33,300	17,700	15,600	26,800	21,400	5,400
Life and related scientists	341,900	217,500	124,400	135,500	76,900	58,600	72,500	44,000	28,500	121,100	86,200	34,900
Agricultural/food scientists	39,700	30,800	8,900	20,100	15,900	4,300	10,400	7,200	3,200	9,200	7,700	1,500
Biological scientists	206,500	119,800	86,800	87,900	43,300	44,600	42,700	24,600	18,100	70,000	47,800	22,100
Environmental life scientists	19,800	15,600	4,200	14,600	11,700	2,900	4,000	3,000	1,000	1,200	900	200
Postsecondary life science teachers	75,800	51,300	24,500	12,800	6,100	6,700	15,500	9,300	6,200	40,800	29,700	11,100
Physical and related scientists	297,900	229,400	68,400	139,600	101,700	38,000	73,000	53,700	19,300	84,900	73,700	11,200
Chemists	121,700	84,800	36,900	70,500	45,400	25,100	23,000	16,300	6,800	28,100	23,100	5,100
Earth scientists/geologists/ oceanographers	72,800	59,800	13,000	38,000	31,700	6,200	24,300	18,600	5,700	10,400	9,300	1,100
Physicists and astronomers	30,400	27,400	3,000	7,200	6,600	600	8,500	7,100	1,400	14,700	13,700	1,000
Other physical scientists	22,200	17,000	5,200	13,100	10,000	3,100	7,300	5,400	1,900	1,800	1,600	200
Postsecondary physical science teachers	50,700	40,400	10,300	10,900	8,000	2,900	9,600	6,300	3,500	29,800	26,000	3,800
Social and related scientists	363,400	167,300	196,200	71,400	26,800	44,600	155,900	60,000	95,900	126,900	76,100	50,800
Economists	35,400	23,800	11,600	11,800	6,800	5,000	15,200	10,700	4,500	8,100	6,300	1,800
Political scientists	11,600	5,600	6,000	5,800	2,900	2,900	4,200	2,000	2,200	1,400	800	700
Psychologists	197,000	71,900	125,100	32,100	8,700	23,400	102,400	30,700	71,700	58,000	30,200	27,700
Sociologists/anthropologists	17,600	8,400	9,200	6,900	3,200	3,700	6,900	3,400	3,500	3,700	1,800	2,000
Other social scientists	13,600	4,900	8,700	4,500	1,400	3,100	5,700	2,300	3,400	2,400	1,200	1,200
Postsecondary social science teachers	88,100	52,600	35,600	10,400	3,800	6,600	21,500	11,000	10,500	53,300	35,800	17,500

See explanatory information and SOURCE at end of table.

Appendix table 6-7

Employed scientists and engineers in the United States, by occupation, highest degree, and sex: 1999

Page 2 of 2

Occupation	All degrees[a]			Bachelor's			Master's			Doctorate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Engineers	1,370,300	1,240,200	130,000	907,400	820,400	86,900	376,500	339,800	36,700	84,200	78,000	6,200
Aerospace engineers	67,400	62,800	4,600	36,300	33,500	2,900	26,300	24,900	1,400	4,600	4,200	300
Chemical engineers	79,900	67,200	12,700	51,100	42,300	8,700	20,700	17,600	3,100	8,100	7,200	800
Civil engineers	223,700	201,200	22,500	160,800	143,800	17,000	57,200	51,900	5,300	5,100	4,900	200
Electrical engineers	362,300	339,700	22,600	233,500	220,000	13,500	109,400	101,500	7,900	18,400	17,300	1,000
Industrial engineers	81,200	68,800	12,300	62,700	53,600	9,100	17,400	14,300	3,000	1,000	900	200
Mechanical engineers	265,800	251,200	14,600	194,300	184,000	10,200	62,000	58,000	4,000	9,100	8,800	300
Other engineers	258,700	221,900	36,800	163,000	139,100	23,900	76,900	65,900	11,000	18,800	16,900	1,800
Postsecondary engineering teachers	31,400	27,500	3,900	5,600	4,100	1,500	6,600	5,700	1,000	19,200	17,700	1,500
Non-S&E occupations	7,440,800	4,466,400	2,974,300	4,355,700	2,519,700	1,836,000	1,949,900	1,120,000	829,900	252,600	183,400	69,300
Managers and administrators	2,035,600	1,429,100	606,500	1,156,800	801,400	355,500	726,600	514,800	211,800	98,400	77,500	20,900
Health-related occupations	848,100	465,400	382,700	304,300	107,100	197,200	100,400	24,300	76,200	25,000	16,600	8,400
Teachers, except S&E postsecondary teachers	683,700	258,100	425,600	361,200	125,200	236,100	304,300	123,000	181,300	11,500	6,700	4,800
Non-S&E postsecondary teachers	124,000	68,900	55,100	18,500	8,800	9,700	41,400	18,600	22,800	53,000	32,100	20,900
Social services/related occupations	475,800	183,600	292,200	215,300	74,800	140,500	239,800	93,000	146,800	12,000	9,600	2,400
Technologists and technicians	387,100	274,500	112,600	309,600	217,100	92,600	65,900	47,400	18,600	9,800	8,800	1,000
Sales and marketing occupations	943,800	639,800	304,000	723,700	479,800	244,000	196,000	141,700	54,300	11,800	9,800	2,000
Art, humanities, and related occupations	164,900	81,600	83,300	107,400	53,800	53,600	48,800	22,900	25,900	6,000	3,300	2,700
Other non-S&E occupations	1,777,800	1,065,500	712,300	1,158,700	651,800	506,800	226,600	134,400	92,200	25,000	18,900	6,200

[a] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT)

Appendix table 6-8

Employed scientists and engineers in the United States, by occupation, highest degree, and race/ethnicity: 1999

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Occupation	All degrees[a]						Bachelor's					
	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native
All occupations	10,981,600	9,124,600	805,900	597,100	417,200	33,300	6,350,100	5,300,500	394,800	362,000	268,800	22,000
S&E occupations	3,540,800	2,896,600	390,500	121,600	120,900	10,600	1,994,400	1,680,900	158,300	73,900	74,800	6,200
Computer/mathematical scientists	1,167,400	922,200	153,600	51,400	37,600	2,700	740,500	612,200	65,400	34,200	27,000	1,700
Computer/information scientists	1,058,100	833,200	143,500	45,000	34,000	2,500	715,400	591,100	64,200	32,700	25,700	1,700
Mathematical scientists	36,200	29,000	3,700	2,100	1,500	S	12,400	10,400	S	800	900	S
Postsecondary computer/ mathematics teachers	73,000	60,000	6,300	4,300	2,200	200	12,700	10,700	900	700	S	S
Life and related scientists	341,900	285,100	37,700	6,600	10,900	1,500	135,500	117,100	9,800	2,000	5,700	900
Agricultural/food scientists	39,700	34,700	2,500	1,100	1,200	100	20,100	18,400	S	800	S	S
Biological scientists	206,500	164,500	30,100	3,400	7,500	1,000	87,900	73,100	8,600	1,200	4,400	600
Environmental life scientists	19,800	19,100	300	S	S	200	14,600	14,300	S	S	S	S
Postsecondary life science teachers	75,800	66,700	4,700	2,000	2,200	200	12,800	11,300	S	S	800	S
Physical and related scientists	297,900	252,500	27,800	8,800	7,800	900	139,600	120,600	8,400	5,800	4,600	S
Chemists	121,700	96,400	15,500	5,700	4,100	100	70,500	57,400	5,600	4,200	3,200	S
Earth scientists/geologists/oceanographers	72,800	66,600	3,300	800	1,900	200	38,000	35,500	900	S	900	S
Physicists and astronomers	30,400	26,200	3,000	800	300	100	7,200	6,400	400	S	S	S
Other physical scientists	22,200	19,800	1,400	500	300	S	14,100	12,100	S	S	S	S
Postsecondary physical science teachers	50,700	43,600	4,500	1,000	1,300	300	10,900	9,200	1,100	300	300	S
Social and related scientists	363,400	314,400	14,800	17,200	15,500	1,500	71,400	58,300	4,000	4,600	4,200	S
Economists	35,400	29,600	3,600	800	1,500	S	11,800	9,400	1,400	S	S	S
Political scientists	11,600	9,400	300	500	1,300	S	5,800	4,900	S	S	700	S
Psychologists	197,000	176,100	3,000	9,300	8,100	500	32,100	26,500	S	2,800	2,100	S
Sociologists/anthropologists	17,600	15,400	600	1,200	400	S	6,900	6,200	S	S	S	S
Other social scientists	13,600	9,600	1,600	1,100	1,300	S	4,500	2,700	1,000	S	S	S
Postsecondary social science teachers	88,100	74,300	5,800	4,200	3,000	700	10,400	8,700	S	S	S	S
Engineers	1,370,300	1,122,400	156,600	37,700	49,100	4,100	907,400	772,800	70,600	27,300	33,300	3,100
Aerospace engineers	67,400	56,800	7,400	1,600	1,300	100	36,300	30,700	3,500	1,400	700	S
Chemical engineers	79,900	63,000	11,200	2,500	3,000	200	51,100	42,600	4,600	1,500	2,200	S
Civil engineers	223,700	181,200	25,600	4,800	11,100	800	160,800	133,900	14,500	3,900	7,600	700
Electrical engineers	362,300	281,800	55,200	10,400	14,000	800	233,500	190,000	25,800	7,800	9,200	700
Industrial engineers	81,200	69,000	5,100	3,400	3,300	400	62,700	54,400	2,900	2,600	2,600	200
Mechanical engineers	265,800	223,800	26,600	7,000	7,300	1,000	194,300	171,800	11,500	4,700	5,400	700

See explanatory information and SOURCE at end of table.

Appendix table 6-8

Employed scientists and engineers in the United States, by occupation, highest degree, and race/ethnicity: 1999

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Occupation	All degrees[a]						Bachelor's					
	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native
Other engineers	258,700	222,900	20,100	6,900	8,100	800	163,000	145,200	6,900	5,000	5,300	600
Postsecondary engineering teachers	31,400	23,800	5,400	1,200	1,000	S	5,600	4,100	900	S	S	S
Non-S&E occupations	7,440,800	6,228,100	415,400	475,500	298,300	22,700	4,355,700	3,619,600	236,500	288,100	194,000	15,800
Managers and administrators	2,035,600	1,740,900	106,500	115,900	66,100	5,500	1,156,800	997,500	51,300	62,900	41,100	3,400
Health-related occupations	848,100	698,700	69,700	43,800	33,700	1,500	304,300	238,100	26,900	21,400	16,600	800
Teachers, except S&E postsecondary teachers	683,700	573,600	18,500	56,200	33,200	2,100	361,200	298,800	11,100	29,900	20,300	1,200
Non-S&E postsecondary teachers	124,000	101,700	9,700	7,600	4,200	500	18,500	14,000	1,600	1,700	1,100	S
Social services/related occupations	475,800	363,000	13,900	64,900	30,900	3,000	215,300	153,300	7,400	33,300	19,900	1,500
Technologists and technicians	387,100	305,900	46,700	21,800	11,500	1,200	309,600	248,900	30,600	19,700	9,300	1,000
Sales and marketing occupations	943,800	817,000	52,800	41,400	29,300	2,900	723,700	630,500	35,600	30,400	24,100	2,800
Art, humanities, and related occupations	164,900	147,100	6,700	5,400	5,400	S	107,400	96,100	4,300	3,000	3,600	S
Other non-S&E occupations	1,777,800	1,480,200	91,000	118,400	82,100	5,700	1,158,700	942,500	67,400	85,900	57,900	4,600
All occupations	2,982,000	2,440,500	266,600	168,600	98,000	7,700	736,700	583,300	103,800	25,800	21,200	2,000
S&E occupations	1,032,100	807,200	153,000	35,900	32,800	3,000	484,100	381,600	77,000	11,000	12,900	1,400
Computer/mathematical scientists	354,100	256,200	72,900	15,200	8,800	900	67,100	49,500	14,500	1,400	1,600	S
Computer/information scientists	304,800	216,200	69,100	11,600	7,200	700	32,400	21,800	9,600	200	800	S
Mathematical scientists	16,000	12,400	2,000	1,100	500	S	7,900	6,200	1,400	100	100	S
Postsecondary computer/mathematics teachers	33,300	27,600	1,900	2,500	1,100	S	26,800	21,500	3,600	1,100	600	S
Life and related scientists	72,500	61,200	7,100	2,200	1,800	300	121,100	95,600	19,500	2,100	3,500	400
Agricultural/food scientists	10,400	8,800	1,000	S	300	S	9,200	7,500	1,000	200	400	S
Biological scientists	42,700	35,200	5,400	1,100	900	S	70,000	51,200	15,200	1,100	2,200	200
Environmental life scientists	4,000	3,800	S	S	S	S	1,200	1,100	S	S	S	S
Postsecondary life science teachers	15,500	13,400	600	900	500	S	40,800	35,900	3,100	900	800	100
Physical and related scientists	73,000	62,300	7,100	1,800	1,400	400	84,900	69,200	12,300	1,200	1,800	300
Chemists	23,000	18,100	3,500	1,100	400	S	28,100	20,700	6,500	400	500	S
Earth scientists/geologists/oceanographers	24,300	21,800	1,300	200	800	S	10,400	9,000	1,100	S	200	S
Physicists and astronomers	8,500	7,500	600	S	S	S	14,700	12,300	2,000	100	200	S
Other physical scientists	7,300	6,100	1,000	S	S	S	1,800	1,600	100	S	S	S
Postsecondary physical science teachers	9,800	8,700	800	100	100	S	29,800	25,600	2,600	600	900	200

See explanatory information and SOURCE at end of table.

Appendix table 6-8

Employed scientists and engineers in the United States, by occupation, highest degree, and race/ethnicity: 1999

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Occupation	All degrees[a]						Bachelor's					
	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Total[b]	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native
Social and related scientists	155,900	136,200	4,000	8,100	7,100	500	126,900	110,800	6,800	4,500	4,100	600
Economists	15,200	13,100	1,200	S	700	S	8,100	6,700	1,000	100	200	S
Political scientists	4,200	3,100	S	S	600	S	1,400	1,300	S	S	S	S
Psychologists	102,400	92,100	1,000	5,100	4,000	200	58,000	53,100	1,200	1,500	1,900	300
Sociologists/anthropologists	6,900	5,700	400	600	S	S	3,700	3,400	100	100	100	S
Other social scientists	5,700	4,100	400	400	800	S	2,400	1,800	200	300	S	S
Postsecondary social science teachers	21,500	18,100	900	1,400	900	S	53,300	44,500	4,100	2,500	1,900	300
Engineers	376,500	291,300	62,000	8,600	13,600	900	84,200	56,500	23,900	1,700	1,900	100
Aerospace engineers	26,300	22,600	2,700	200	500	S	4,600	3,300	1,100	100	100	S
Chemical engineers	20,700	15,200	4,000	800	600	S	8,100	5,200	2,600	100	100	S
Civil engineers	57,200	43,600	9,700	700	3,200	S	5,100	3,200	1,400	200	200	S
Electrical engineers	109,400	80,000	22,600	2,300	4,400	S	18,400	10,900	6,800	200	400	S
Industrial engineers	17,400	13,800	2,000	800	600	S	1,000	800	200	S	S	S
Mechanical engineers	62,000	46,600	11,400	2,100	1,600	300	9,100	5,300	3,500	100	100	S
Other engineers	76,900	64,400	8,400	1,600	2,400	S	18,800	13,300	4,800	300	400	S
Postsecondary engineering teachers	6,600	5,100	1,100	S	300	S	19,200	14,500	3,500	700	500	S
Non-S&E occupations	1,949,900	1,633,200	113,600	132,700	65,300	4,700	252,600	201,700	26,800	14,800	8,300	600
Managers and administrators	726,600	618,100	44,100	42,500	20,400	1,500	98,400	79,800	9,700	5,700	3,000	200
Health-related occupations	100,400	82,800	9,000	4,700	3,800	S	25,000	17,500	5,300	1,100	1,000	100
Teachers, except S&E postsecondary teachers	304,300	260,700	6,700	24,600	11,300	800	11,500	8,700	400	1,500	800	S
Non-S&E postsecondary teachers	41,400	35,100	2,200	2,800	1,000	S	53,000	42,700	5,100	3,100	1,600	200
Social services/related occupations	239,800	192,500	5,700	29,500	10,600	1,400	12,000	9,000	800	1,900	300	S
Technologists and technicians	65,900	48,600	13,400	2,100	1,800	S	9,800	7,100	2,600	S	100	S
Sales and marketing occupations	196,000	167,400	14,700	9,000	4,600	S	11,800	9,700	1,300	400	400	S
Art, humanities and related occupations	48,800	42,900	2,000	2,200	1,700	S	6,000	5,600	200	100	100	S
Other non-S&E occupations	226,600	185,200	15,900	15,200	10,000	300	25,000	21,600	1,400	900	1,100	S

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes first-professional degrees not shown separately.

[b] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-9

Employed scientists and engineers in the United States, by occupation, highest degree, and disability status: 1999

Occupation	All degrees[a]		Bachelor's		Master's		Doctorate	
	Without disabilities	With disabilities	Without disabilities	With disabilities	Without disabilities	With disabilities	Without disabilities	With disabilities
All occupations	10,237,000	744,600	5,906,800	443,300	2,769,400	212,600	687,500	49,200
S&E occupations	3,334,900	206,000	1,877,600	116,800	975,200	56,800	453,200	30,900
Computer/mathematical scientists	1,099,400	67,900	696,900	43,600	334,200	19,900	62,700	4,400
Computer/information scientists	999,700	58,400	674,300	41,100	289,300	15,600	30,700	1,700
Mathematical scientists	33,900	2,400	11,100	S	15,300	700	7,400	400
mathematics teachers	65,800	7,200	11,500	1,200	29,600	3,700	24,600	2,300
Life and related scientists	321,700	20,200	127,500	8,000	68,800	3,800	113,700	7,400
Agricultural/food scientists	37,200	2,500	18,500	1,700	10,400	S	8,300	900
Biological scientists	195,800	10,800	83,600	4,300	39,800	2,900	66,600	3,300
Environmental life scientists	18,700	1,100	13,800	S	3,900	S	1,100	100
Postsecondary life science teachers	70,100	5,800	11,600	1,200	14,700	700	37,700	3,100
Physical and related scientists	281,400	16,500	132,900	6,700	67,900	5,100	80,100	4,800
Chemists	116,200	5,600	67,400	3,000	21,800	1,200	26,900	1,300
oceanographers	67,900	4,900	35,600	2,300	22,300	1,900	9,700	600
Physicists and astronomers	29,400	1,000	7,200	S	8,200	200	14,000	700
Other physical scientists	20,000	2,200	12,000	S	6,300	1,100	1,700	S
science teachers	47,800	2,800	10,700	S	9,300	600	27,800	2,100
Social and related scientists	342,900	20,600	70,100	1,400	146,900	9,000	117,200	9,700
Economists	32,900	2,500	11,000	S	14,400	800	7,500	600
Political scientists	11,400	200	5,800	S	4,200	S	1,200	200
Psychologists	185,500	11,500	31,600	S	95,600	6,800	54,000	3,900
Sociologists/anthropologists	17,000	600	6,900	S	6,600	S	3,500	200
Other social scientists	13,100	500	4,500	S	5,500	S	2,000	400
science teachers	83,000	5,200	10,400	S	20,500	900	49,000	4,200
Engineers	1,289,500	80,800	850,300	57,100	357,500	19,100	79,600	4,600
Aerospace engineers	62,600	4,800	33,400	2,900	24,700	1,700	4,400	200
Chemical engineers	76,800	3,000	48,900	2,200	20,200	500	7,700	300
Civil engineers	210,500	13,100	151,700	9,100	53,600	3,700	4,800	300
Electrical engineers	340,100	22,100	218,200	15,400	103,700	5,700	17,400	1,000
Industrial engineers	75,100	6,000	57,300	5,400	16,800	600	1,000	S
Mechanical engineers	251,300	14,400	182,800	11,500	59,500	2,500	8,600	400
Other engineers	243,400	15,300	153,100	10,000	72,600	4,300	17,700	1,000
Postsecondary engineering teachers	29,400	2,000	5,000	S	6,600	S	17,900	1,300
Non-S&E occupations	6,902,200	538,600	4,029,200	326,400	1,794,100	155,700	234,300	18,300
Managers and administrators	1,887,800	147,800	1,068,800	88,000	675,700	50,900	92,000	6,500
Health-related occupations	813,600	34,500	290,700	13,600	95,800	4,700	23,300	1,700
postsecondary teachers	628,200	55,500	336,100	25,200	276,400	27,900	10,100	1,400
Non-S&E postsecondary teachers	115,900	8,100	16,700	1,800	38,500	2,900	49,800	3,200
Social services/related occupations	434,500	41,400	199,600	15,700	216,300	23,500	10,500	1,500
Technologists and technicians	366,200	20,900	292,600	17,000	63,100	2,900	9,000	800
Sales and marketing occupations	870,500	73,300	667,500	56,300	181,600	14,500	10,500	1,300
Art, humanities, and related occupations	150,700	14,200	98,500	8,900	44,500	4,300	5,600	400
Other non-S&E occupations	1,634,600	143,100	1,058,800	99,900	202,300	24,300	23,500	1,500

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes first-professional degrees not shown separately

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-10

Employed scientists and engineers, by broad occupation, employment sector, sex, race/ethnicity, and disability status: 1999

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Occupation and employment sector	Total	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
All occupations	10,981,600	7,171,500	3,810,200	9,124,600	805,900	597,100	417,200	33,300	10,237,000	744,600
Pre-/elementary/middle/ secondary school	845,200	311,400	533,800	702,600	22,100	75,100	42,500	2,700	778,800	66,400
2-year college	109,100	56,500	52,600	86,900	5,100	11,100	5,600	500	97,200	11,900
4-year college or university	1,068,100	600,000	468,100	851,200	103,200	61,500	47,600	3,200	1,002,000	66,200
Private for-profit	5,586,800	4,067,600	1,519,200	4,678,500	478,000	229,600	185,500	14,800	5,247,800	339,000
Private not-for-profit	708,700	318,000	390,600	589,300	35,800	49,000	31,800	2,200	667,000	41,700
Self-employed, not incorporated	726,600	494,100	232,400	657,800	32,800	13,400	21,000	1,600	660,000	66,500
Self-employed, incorporated	518,300	383,600	134,700	458,300	33,400	14,400	10,900	800	473,700	44,600
Local government	384,100	231,000	153,100	285,000	28,000	43,400	25,300	2,200	357,800	26,300
State government	446,100	271,200	174,900	353,200	21,500	48,500	20,500	2,200	410,200	36,000
U.S. military	92,800	81,500	11,400	77,000	4,700	6,300	4,600	200	89,700	3,100
U.S. government	480,200	346,200	134,000	375,500	38,600	42,800	19,800	2,800	438,200	42,000
Other non-educational institution	15,700	10,400	5,300	9,300	2,500	1,900	1,900	S	14,700	900
All S&E occupations	3,540,800	2,705,000	835,800	2,896,600	390,500	121,600	120,900	10,600	3,334,900	206,000
Pre-/elementary/middle/ secondary school	41,600	15,700	25,900	37,100	700	1,500	2,200	S	39,700	1,900
2-year college	56,700	34,400	22,300	48,700	2,000	3,300	2,500	200	50,800	5,900
4-year college or university	510,100	335,500	174,600	416,600	55,500	17,700	18,400	1,600	481,600	28,700
Private for-profit	2,172,400	1,762,400	409,900	1,763,200	265,500	67,700	70,000	5,800	2,054,900	117,500
Private not-for-profit	114,000	62,500	51,500	95,600	8,100	4,100	5,600	600	106,500	7,500
Self-employed, not incorporated	105,200	67,900	37,300	98,500	4,000	500	2,000	200	97,400	7,800
Self-employed, incorporated	84,600	68,900	15,600	74,700	6,100	2,000	1,600	S	78,300	6,300
Local government	77,100	58,800	18,300	54,900	12,700	3,800	5,300	400	74,000	3,100
State government	131,700	99,600	32,100	107,000	11,300	7,200	5,500	600	123,500	8,200
U.S. military	21,500	19,100	2,400	16,700	2,000	1,900	800	100	20,800	700
U.S. government	219,600	175,500	44,200	179,300	21,400	11,500	6,400	800	201,500	18,100
Other non-educational institution	6,400	4,600	1,800	4,300	1,200	300	600	S	6,000	400
Computer and mathematical scientists	1,167,400	850,600	316,700	922,200	153,600	51,400	37,600	2,700	1,099,400	67,900
Pre-/elementary/middle/ secondary school	7,800	4,600	3,100	6,800	S	S	S	S	7,800	S
2-year college	26,000	15,900	10,100	21,400	1,300	2,100	1,200	S	22,100	3,900
4-year college or university	98,500	64,400	34,200	81,800	10,300	3,000	2,700	100	91,700	5,900
Private for-profit	855,300	637,800	217,500	665,300	125,100	34,800	27,900	2,200	812,000	43,300
Private not-for-profit	35,600	19,400	16,100	31,100	2,400	1,200	800	S	32,400	3,200
Self-employed, not incorporated	21,500	16,800	4,700	19,900	1,300	S	300	S	20,500	1,000
Self-employed, incorporated	30,100	25,800	4,300	24,800	3,400	1,500	S	S	28,600	1,400
Local government	12,900	7,900	5,000	7,900	2,800	900	1,200	S	11,500	1,400
State government	25,700	17,200	8,500	20,100	2,000	2,100	1,500	S	25,400	S
U.S. military	6,500	6,000	500	5,700	S	S	S	S	6,200	S
U.S. government	46,100	34,000	12,100	36,700	4,200	4,200	1,000	S	39,800	6,300
Other non-educational institution	1,400	800	500	800	S	S	S	S	1,300	S

See explanatory information and SOURCE at end of table.

Appendix table 6-10

Employed scientists and engineers, by broad occupation, employment sector, sex, race/ethnicity, and disability status: 1999

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Occupation and employment sector	Total	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
Life and related scientists	341,900	217,500	124,400	285,100	37,700	6,600	10,900	1,500	321,700	20,200
Pre-/elementary/middle/ secondary school	S	S	S	S	S	S	S	S	S	S
2-year college	10,500	5,500	4,900	9,400	200	400	500	S	9,500	1,000
4-year college or university	152,300	92,500	59,900	124,000	18,900	3,000	5,800	200	144,200	8,100
Private for-profit	87,900	56,700	31,200	73,500	10,700	1,200	2,300	200	84,000	4,000
Private not-for-profit	12,800	6,600	6,200	9,900	2,400	100	300	100	12,300	500
Self-employed, not incorporated	8,000	4,700	3,200	7,400	300	S	300	S	7,700	300
Self-employed, incorporated	4,500	3,900	700	4,300	200	S	S	S	3,700	900
Local government	8,600	5,500	3,100	5,800	1,100	S	1,000	S	8,600	S
State government	19,900	13,600	6,300	18,600	700	S	200	300	18,000	1,900
U.S. military	700	300	400	600	S	S	S	S	700	S
U.S. government	36,000	27,600	8,400	31,200	2,800	1,400	300	200	32,900	3,100
Other non-educational institution	200	100	S	100	S	S	S	S	200	S
Physical and related scientists	297,900	229,400	68,400	252,500	27,800	8,800	7,800	900	281,400	16,500
Pre-/elementary/middle/ secondary school	S	S	S	S	S	S	S	S	S	S
2-year college	7,300	5,500	1,900	6,600	300	300	100	S	7,000	300
4-year college or university	75,000	57,900	16,900	64,000	7,500	1,000	1,800	300	71,500	3,300
Private for-profit	142,800	108,600	34,200	119,100	15,100	4,300	3,900	400	134,500	8,300
Private not-for-profit	6,100	4,900	1,200	5,000	400	100	500	S	6,000	100
Self-employed, not incorporated	6,300	5,900	400	6,000	100	S	S	S	5,200	1,000
Self-employed, incorporated	5,700	4,100	1,700	5,300	300	S	S	S	5,400	S
Local government	6,800	5,400	1,400	5,500	800	S	S	S	6,600	S
State government	16,200	11,800	4,300	13,900	1,100	1,000	200	S	14,400	1,800
U.S. military	3,300	3,000	S	2,800	S	S	S	S	3,300	S
U.S. government	28,000	21,900	6,100	23,800	2,200	1,100	900	S	27,000	1,100
Other non-educational institution	300	300	S	300	S	S	S	S	300	S
Social and related scientists	363,400	167,300	196,200	314,400	14,800	17,200	15,500	1,500	342,900	20,600
Pre-/elementary/middle/ secondary school	32,500	9,700	22,800	29,500	300	1,100	1,600	S	31,200	1,400
2-year college	9,400	4,600	4,800	8,400	100	500	400	S	9,000	400
4-year college or university	122,000	65,900	56,200	100,500	7,400	7,600	5,400	700	115,900	6,100
Private for-profit	52,700	23,200	29,500	47,400	2,800	1,100	1,500	S	49,300	3,400
Private not-for-profit	41,600	15,500	26,100	34,400	1,300	2,700	3,100	S	39,300	2,300
Self-employed, not incorporated	44,500	16,500	27,900	42,800	700	300	600	100	41,200	3,300
Self-employed, incorporated	13,800	5,400	8,400	13,200	100	S	200	S	13,300	500
Local government	9,300	4,200	5,100	7,500	S	400	1,100	S	8,900	400
State government	18,400	10,800	7,600	15,900	600	1,500	300	100	16,600	1,800
U.S. military	1,100	400	700	500	S	S	S	S	1,100	S
U.S. government	15,500	9,300	6,200	12,800	500	1,300	700	100	14,800	800
Other non-educational institution	2,600	1,700	1,000	1,600	600	S	400	S	2,500	S

See explanatory information and SOURCE at end of table.

Appendix table 6-10

Employed scientists and engineers, by broad occupation, employment sector, sex, race/ethnicity, and disability status: 1999

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Occupation and employment sector	Total	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/ Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
Engineers	1,370,300	1,240,200	130,000	1,122,400	156,600	37,700	49,100	4,100	1,289,500	80,800
Pre-/elementary/middle/ secondary school	900	900	S	S	S	S	S	S	700	S
2-year college	3,400	2,800	600	2,900	S	S	S	S	3,300	S
4-year college or university	62,400	55,000	5,700	46,400	11,200	1,800	2,100	S	58,100	4,300
Private for-profit	1,033,500	936,100	97,400	857,900	111,800	26,300	34,400	2,900	975,100	58,400
Private not-for-profit	18,000	16,000	1,900	15,200	1,600	S	900	200	16,500	1,400
Self-employed, not incorporated	25,000	23,900	1,100	22,400	1,600	200	800	S	22,800	2,200
Self-employed, incorporated	30,400	29,800	600	27,100	2,100	300	900	S	27,400	3,100
Local government	39,400	35,700	3,700	28,100	7,700	1,500	1,900	S	38,400	1,000
State government	51,500	46,100	5,400	38,600	6,800	2,500	3,200	S	49,100	2,500
U.S. military	9,800	9,400	400	7,000	1,400	1,000	400	S	9,500	S
U.S. government	94,000	82,700	11,200	74,700	11,600	3,500	3,600	400	87,000	6,900
Other non-educational institution	2,000	1,700	300	1,500	S	S	S	S	1,800	S
Non-S&E occupations	7,440,800	4,466,400	2,974,300	6,228,100	415,400	475,500	296,300	22,700	6,902,200	538,600
Pre-/elementary/middle/secondary school	803,600	295,700	507,900	665,500	21,400	73,600	40,300	2,700	739,100	64,500
2-year college	52,400	22,100	30,300	38,200	3,000	7,700	3,100	400	46,400	6,000
4-year college or university	558,000	264,400	293,500	434,500	47,800	43,900	29,300	1,400	520,400	37,400
Private for-profit	3,414,500	2,305,100	1,109,300	2,915,300	212,500	161,900	115,500	9,000	3,192,900	221,600
Private not-for-profit	594,700	255,500	339,200	493,800	27,700	44,900	26,200	1,600	560,500	34,200
Self-employed, not incorporated	621,400	426,200	195,200	559,400	28,800	12,800	19,000	1,300	562,700	58,700
Self-employed, incorporated	433,700	314,700	119,000	383,600	27,300	12,400	9,300	700	395,400	38,300
Local government	307,000	172,200	134,800	230,100	15,300	39,600	20,000	1,900	283,800	23,300
State government	314,400	171,600	142,800	246,200	10,300	41,400	15,000	1,500	286,700	27,700
U.S. military	71,400	62,400	9,000	60,300	2,700	4,400	3,800	100	69,000	2,400
U.S. government	260,500	170,700	89,800	196,200	17,300	31,300	13,400	1,900	236,700	23,800
Other non-educational institution	9,300	5,800	3,500	5,000	1,300	1,600	1,300	S	8,700	S

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-11

Participation of employed scientists and engineers in work-related training, by type of training, broad occupation, sex, race/ethnicity, and disability status: 1999

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Type of training attended[a] and occupation	Total	Sex: Male	Sex: Female	Race/ethnicity[b]: White	Race/ethnicity[b]: Asian/Pacific Islander	Race/ethnicity[b]: Black	Race/ethnicity[b]: Hispanic	Race/ethnicity[b]: American Indian/ Alaskan Native	Disability status: Without disabilities	Disability status: With disabilities
	Number participating in work-related training during the past year									
All work-related training, all occupations	7,611,800	4,894,300	2,717,500	6,322,800	514,000	453,400	294,600	24,200	7,109,700	502,000
S&E occupations	2,384,700	1,795,200	589,500	1,946,000	255,100	91,000	84,600	7,600	2,251,900	132,900
Science occupations	1,432,900	939,800	493,100	1,167,600	148,600	62,800	49,200	4,600	1,353,100	79,800
Computer/math scientists	785,700	559,900	225,700	612,200	105,600	40,100	26,000	1,700	742,400	43,300
Life/related scientists	210,000	135,900	74,100	178,200	20,000	4,100	6,500	1,200	198,600	11,400
Physical/related scientists	176,300	133,700	42,600	148,800	15,900	6,000	4,900	600	165,600	10,700
Social/related scientists	260,900	110,300	150,600	228,300	7,100	12,600	11,800	1,000	246,400	14,500
Engineering occupations	951,800	855,400	96,400	778,400	106,400	28,200	35,400	3,000	898,800	53,000
Non-S&E occupations	5,227,000	3,099,100	2,127,900	4,376,800	258,900	362,400	210,000	16,700	4,857,900	369,200
	Percent of those participating in training who participated in each type of training									
Management/supervisor training, all occupations	30.1	33.2	24.3	29.9	27.3	35.1	30.0	28.5	29.8	33.1
S&E occupations	26.1	28.1	20.1	26.0	25.0	28.0	30.0	25.0	26.2	24.4
Science occupations	21.6	23.4	18.2	21.1	23.2	24.0	25.2	21.7	21.6	21.9
Computer/math scientists	23.7	24.2	22.4	23.2	24.1	25.7	30.0	S	23.8	22.2
Life/related scientists	24.3	26.3	20.5	24.5	18.5	26.8	32.3	33.3	24.1	28.1
Physical/related scientists	20.8	22.7	14.8	20.1	22.0	30.0	28.6	16.7	20.4	27.1
Social/related scientists	13.6	16.4	11.6	13.3	26.8	15.0	10.2	20.0	13.7	12.4
Engineering occupations	32.9	33.3	30.0	33.4	27.6	36.5	36.4	30.0	33.2	28.1
Non-S&E occupations	31.9	36.2	25.5	31.7	29.5	36.9	30.0	29.9	31.5	36.3
Occupational training, all occupations	87.3	86.3	89.2	87.2	87.4	88.8	88.0	87.2	87.5	84.8
S&E occupations	87.1	86.6	88.7	86.8	88.4	90.3	87.0	86.8	87.2	86.0
Science occupations	88.9	88.6	89.4	88.7	90.6	89.2	89.0	82.6	88.8	90.0
Computer/math scientists	89.9	89.8	90.1	89.0	93.6	92.5	91.2	94.1	89.8	91.2
Life/related scientists	85.2	85.2	85.2	85.4	85.0	80.5	86.2	75.0	85.1	86.0
Physical/related scientists	85.1	85.2	84.5	85.8	79.2	81.7	85.7	83.3	85.1	84.1
Social/related scientists	91.5	90.9	92.0	92.3	87.3	85.7	87.5	90.0	91.4	93.1
Engineering occupations	84.5	84.5	84.6	84.1	85.5	92.6	84.2	93.3	84.8	80.0
Non-S&E occupations	87.4	86.0	89.4	87.3	86.4	88.5	88.4	86.8	87.6	84.4

See explanatory information and SOURCE at end of table.

Appendix table 6-11

Participation of employed scientists and engineers in work-related training, by type of training, broad occupation, sex, race/ethnicity, and disability status: 1999

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Type of training attended[a] and occupation	Total	Sex		Race/ethnicity[b]					Disability status	
		Male	Female	White	Asian/Pacific Islander	Black	Hispanic	American Indian/ Alaskan Native	Without disabilities	With disabilities
	Percent of those participating in training who participated in each type of training									
General professional training, all occupations	22.8	22.7	22.9	22.2	23.1	27.9	27.2	23.1	22.5	26.9
S&E occupations	22.0	21.6	23.4	21.2	23.8	28.7	29.0	23.7	21.9	24.5
Science occupations	20.4	19.6	22.0	19.5	20.9	28.8	28.7	26.1	20.3	21.8
Computer/math scientists	20.4	19.4	22.8	19.8	18.4	26.4	31.2	23.5	20.3	21.0
Life/related scientists	23.5	21.4	27.3	22.6	24.0	41.5	32.3	33.3	23.3	27.2
Physical/related scientists	20.0	18.9	23.5	18.4	28.9	28.3	30.6	16.7	20.1	18.7
Social/related scientists	18.3	19.0	17.7	16.9	31.0	32.5	21.2	30.0	18.1	22.1
Engineering occupations	24.5	23.8	30.7	23.7	27.8	28.4	29.1	20.0	24.3	28.5
Non-S&E occupations	23.1	23.3	22.8	22.6	22.4	27.8	26.5	22.8	22.8	27.8

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Includes management/supervisory training, training in one's occupational field, and general professional training (e.g., public speaking, business writing).

[b] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding and because individuals could participate in more than one type of training.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-12

Reasons for attending work-related training in the past year, by broad occupation, sex, race/ethnicity, and disability status: 1999

(Percent of those attending)

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Reason for attending training and occupation	Total	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/Pacific Islander	Black	Hispanic	American Indian/Alaskan Native	Without disabilities	With disabilities
Facilitate change in occupational field										
All occupations	13.8	13.5	14.4	12.5	19.5	20.8	21.8	19.8	13.8	14.8
S&E occupations	13.5	13.4	13.8	11.8	20.5	20.5	21.9	15.8	13.3	15.4
Scientists	14.6	15.0	13.7	12.9	21.7	21.7	23.4	19.6	14.3	19.5
Computer/math scientists	17.2	17.5	16.4	15.3	23.4	22.9	26.5	47.1	17.1	18.5
Life/related scientists	11.6	10.7	13.1	10.3	16.5	19.5	26.2	8.3	11.0	22.8
Physical/related scientists	12.5	11.7	14.6	11.2	22.6	13.3	18.4	S	11.7	24.3
Social/related scientists	10.5	11.6	9.7	9.6	8.5	22.2	16.9	S	10.1	16.6
Engineers	11.8	11.5	14.1	10.2	19.0	18.1	19.8	6.7	11.9	9.2
Non-S&E occupations	14.0	13.6	14.5	12.8	18.4	20.8	21.7	21.6	13.9	14.6
Gain further skills/knowledge in occupational field										
All occupations	93.2	92.7	94.1	93.2	93.4	93.8	93.7	92.6	93.3	92.0
S&E occupations	93.1	92.8	93.8	92.9	94.1	93.8	93.4	88.2	93.1	92.2
Scientists	93.6	93.2	94.3	93.3	95.6	94.3	94.5	89.1	93.6	93.0
Computer/math scientists	94.8	94.4	95.7	94.3	97.0	95.0	95.8	94.1	94.7	96.3
Life/related scientists	91.1	90.8	91.8	90.8	93.5	95.1	90.8	83.3	91.4	86.0
Physical/related scientists	90.1	90.5	88.7	90.2	90.6	83.3	95.9	83.3	90.0	90.7
Social/related scientists	94.5	93.7	95.1	94.5	93.0	96.8	94.1	100.0	94.8	90.3
Engineers	92.3	92.4	91.2	92.4	92.0	92.9	91.8	90.0	92.4	91.1
Non-S&E occupations	93.3	92.7	94.2	93.3	92.7	93.8	93.8	93.4	93.4	92.0
Licensure/certification										
All occupations	31.0	30.3	32.4	31.5	24.1	31.1	31.6	39.7	31.1	29.9
S&E occupations	20.5	19.4	24.0	20.6	17.2	25.1	22.0	34.2	20.6	20.2
Scientists	22.1	20.8	24.6	22.4	17.8	22.5	26.8	34.8	22.2	21.1
Computer/math scientists	16.0	17.4	12.4	14.9	18.5	19.2	25.4	41.2	16.1	13.9
Life/related scientists	23.6	24.6	21.9	24.9	16.0	4.9	21.5	25.0	24.2	14.0
Physical/related scientists	15.7	15.0	18.1	15.9	11.3	18.3	18.4	50.0	15.9	13.1
Social/related scientists	43.7	40.8	45.9	44.9	26.8	40.5	35.6	40.0	43.1	54.5
Engineers	18.2	17.9	20.9	18.0	16.5	30.9	15.5	33.3	18.1	18.9
Non-S&E occupations	35.8	36.6	34.7	36.4	30.8	32.6	35.5	41.9	36.0	33.5
All occupations	37.4	38.1	36.1	36.0	43.4	45.4	42.5	46.3	37.6	33.8
S&E occupations	42.7	43.2	41.0	40.8	49.7	55.8	51.3	50.0	43.0	37.3

See explanatory information and SOURCE at end of table.

Appendix table 6-12

Reasons for attending work-related training in the past year, by broad occupation, sex, race/ethnicity, and disability status: 1999

(Percent of those attending)

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Reason for attending training and occupation	Total	Sex		Race/ethnicity[a]					Disability status	
		Male	Female	White	Asian/Pacific Islander	Black	Hispanic	American Indian/Alaskan Native	Without disabilities	With disabilities
Scientists	42.6	44.0	39.9	40.5	50.4	55.1	51.0	52.2	42.8	38.5
Computer/math scientists	51.0	51.7	49.3	48.9	56.6	63.3	58.1	70.6	51.2	48.3
Life/related scientists	35.0	32.9	38.9	33.8	38.0	48.8	49.2	50.0	35.6	25.4
Physical/related scientists	36.8	35.8	40.1	36.4	34.0	45.0	42.9	50.0	36.7	37.4
Social/related scientists	27.1	28.2	26.3	25.8	29.6	35.7	39.8	30.0	27.5	20.0
Engineers	42.8	42.4	46.7	41.1	48.7	57.4	51.7	50.0	43.3	35.7
Non-S&E occupations	34.9	35.1	34.7	33.9	37.2	42.8	38.9	43.7	35.1	32.5
Learn skills or knowledge needed for recently acquired position										
All occupations	29.7	28.3	32.3	28.3	38.9	33.8	37.4	37.6	29.8	28.2
S&E occupations	31.6	30.9	33.8	29.7	42.5	36.9	37.6	36.8	31.6	31.2
Scientists	32.0	31.8	32.4	30.0	43.7	36.1	37.8	39.1	32.0	32.1
Computer/math scientists	37.5	36.8	39.4	35.8	45.7	39.7	41.2	52.9	37.7	34.9
Life/related scientists	26.0	24.1	29.4	24.2	40.5	24.4	27.7	33.3	25.7	29.8
Physical/related scientists	26.7	25.4	30.5	25.3	38.4	28.3	28.6	33.3	26.1	35.5
Social/related scientists	23.8	23.5	24.0	22.1	36.6	31.7	39.0	30.0	23.8	23.4
Engineers	31.0	29.9	40.6	29.1	40.6	38.7	37.6	30.0	31.1	29.8
Non-S&E occupations	28.9	26.8	31.8	27.7	35.5	33.0	37.2	37.7	29.0	27.1
Attendance required/expected by employer										
All occupations	50.3	49.3	52.1	49.6	47.2	60.0	53.9	60.3	50.2	51.6
S&E occupations	49.5	50.5	46.6	49.4	47.2	56.9	52.2	50.0	49.6	48.8
Scientists	47.0	48.0	44.9	46.5	46.4	55.6	50.0	45.7	47.0	46.1
Computer/math scientists	48.7	49.1	47.9	48.3	47.9	56.6	51.5	41.2	48.8	48.0
Life/related scientists	46.9	47.4	46.0	47.3	43.0	39.0	47.7	66.7	47.4	37.7
Physical/related scientists	50.2	50.0	50.5	50.7	45.3	53.3	49.0	50.0	49.9	54.2
Social/related scientists	39.6	41.2	38.4	38.2	35.2	58.7	48.3	30.0	39.5	40.7
Engineers	53.4	53.2	55.2	53.8	48.4	59.9	55.4	56.7	53.4	53.0
Non-S&E occupations	50.6	48.5	53.7	49.7	47.3	60.8	54.6	64.7	50.5	52.6

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-13

Median annual salary of full-time employed scientists and engineers, by broad occupation, age group, sex, and highest degree level: 1999

(Dollars)

Occupation and age	All degree levels[a]			Bachelor's			Master's			Doctorate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
All occupations	54,500	60,000	40,400	49,000	55,000	36,000	58,000	65,000	45,000	70,000	74,500	56,100
29 or younger	34,000	39,000	30,000	32,700	37,600	29,000	38,500	46,500	34,000	49,000	60,000	35,000
30–39	53,000	59,000	43,000	50,000	55,000	40,000	56,000	61,000	45,000	60,000	63,400	52,000
40–49	60,000	67,500	46,000	55,000	60,000	40,000	61,300	70,000	49,000	69,000	72,000	56,800
50 or older	60,000	68,400	46,000	56,000	60,000	41,000	60,000	66,000	48,000	76,000	80,000	60,000
S&E occupations	60,000	64,000	50,300	59,000	60,000	50,000	64,000	68,000	50,000	70,000	72,000	58,000
29 or younger	43,000	45,000	38,000	42,000	45,000	38,000	45,000	50,000	36,000	50,000	60,000	35,000
30–39	60,000	60,000	52,000	58,200	60,000	52,000	60,000	62,000	50,000	60,000	63,000	53,000
40–49	67,000	70,000	58,000	65,000	67,000	56,000	70,000	72,000	59,000	68,000	70,000	59,000
50 or older	70,000	71,400	55,000	66,000	68,000	55,000	69,300	73,000	50,500	77,000	80,000	64,000
Computer and mathematical scientists	64,000	66,000	58,000	60,800	64,000	56,000	68,000	70,000	61,000	72,000	75,000	62,000
29 or younger	50,000	52,800	47,000	50,000	50,000	47,000	59,000	60,000	54,000	65,000	80,000	S
30–39	63,000	65,000	58,000	61,000	65,000	57,000	65,000	68,000	61,000	66,000	70,000	57,000
40–49	68,500	70,000	60,000	65,000	69,000	58,000	72,000	75,000	65,100	75,000	78,000	70,000
50 or older	66,000	70,000	60,000	64,000	65,000	57,000	69,000	72,500	60,000	74,500	75,800	66,800
Life and related scientists	49,000	52,000	40,000	37,000	41,500	33,600	43,800	46,000	41,000	67,000	70,000	60,000
29 or younger	26,000	25,000	26,000	25,000	25,000	25,000	28,100	21,000	31,000	29,000	S	S
30–39	40,000	42,000	38,000	36,000	39,900	33,600	38,000	36,000	39,200	54,000	54,000	54,000
40–49	54,300	55,000	54,000	46,000	45,000	48,000	50,300	50,000	51,200	65,000	67,000	60,000
50 or older	62,000	67,000	49,300	50,000	52,000	S	49,300	52,000	46,000	78,000	80,000	70,900
Physical and related scientists	52,000	56,600	41,400	45,000	47,000	38,000	52,000	58,000	42,400	71,000	73,000	63,000
29 or younger	31,000	28,000	32,000	30,000	28,000	32,000	29,000	28,500	33,500	50,000	43,000	S
30–39	48,000	50,000	41,400	41,600	43,200	38,000	48,000	50,300	43,000	60,000	60,000	58,000
40–49	60,000	62,500	51,000	52,000	53,000	50,000	60,000	65,000	43,000	71,000	72,900	66,000
50 or older	68,900	71,000	50,000	55,200	62,000	49,000	62,000	66,000	50,000	80,000	81,000	74,000
Social and related scientists	47,100	54,000	40,000	30,000	35,000	29,700	41,000	47,500	38,000	60,000	64,000	52,900
29 or younger	29,000	30,000	28,000	28,000	27,000	28,000	30,000	32,000	29,000	40,600	S	38,000
30–39	40,000	46,000	37,000	30,000	S	28,000	36,000	35,000	36,000	48,000	51,000	45,000
40–49	51,000	55,300	46,700	45,000	S	S	46,000	49,000	44,000	56,000	60,000	52,000
50 or older	59,000	62,000	52,800	S	S	S	50,000	50,000	46,000	66,000	70,000	60,000
Engineers	65,000	65,000	55,700	60,000	62,000	52,000	70,000	70,000	61,000	80,000	80,000	68,000
29 or younger	46,000	46,000	45,000	45,000	45,000	45,000	50,000	50,000	48,000	62,000	62,000	S
30–39	60,000	60,000	58,200	59,900	60,000	55,700	64,000	65,000	62,000	70,600	71,500	66,000
40–49	70,000	70,000	64,000	68,500	70,000	60,000	75,000	75,000	72,000	78,700	79,000	70,000
50 or older	74,500	75,000	66,000	70,000	70,000	66,000	79,100	79,400	S	90,000	90,700	84,000
Non-S&E occupations	50,000	60,000	38,500	41,800	50,000	33,500	53,000	62,000	44,000	70,200	79,000	54,000
29 or younger	30,000	34,000	29,100	30,000	32,000	28,000	35,000	40,000	33,000	45,000	56,000	S
30–39	48,000	54,500	40,000	42,500	48,000	36,000	50,000	60,000	41,000	60,000	65,000	50,000
40–49	55,000	65,000	43,000	48,000	55,000	38,300	57,000	68,300	46,500	70,000	80,000	54,000
50 or older	57,000	65,000	43,600	50,000	56,000	40,000	55,000	60,000	46,000	75,000	80,000	56,000

S data with unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Median salaries are rounded to nearest hundred dollars.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-14

Median annual salary of full-time employed scientists and engineers, by broad occupation, race/ethnicity, highest degree level, and age group: 1999

(Dollars)

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Occupation and race/ethnicity[a]	All degrees[b]					Bachelor's					Master's					Doctorate				
	All ages	29 or younger	30–39	40–49	50 or older	All ages	29 or younger	30–39	40–49	50 or older	All ages	29 or younger	30–39	40–49	50 or older	All ages	29 or younger	30–39	40–49	50 or older
All occupations	54,500	34,000	53,000	60,000	60,000	49,000	32,700	50,000	55,000	56,000	58,000	38,500	56,000	61,300	60,000	70,000	49,000	60,000	69,000	76,000
White, non-Hispanic	55,000	33,900	54,000	62,000	62,300	50,000	32,000	50,000	57,900	58,500	58,200	38,000	55,500	63,000	60,000	70,000	43,000	59,500	69,500	77,000
Asian/Pacific Islander	56,000	42,000	60,000	61,000	60,000	48,000	40,000	51,700	52,000	51,000	63,000	55,000	62,000	68,000	66,000	72,000	62,000	66,000	73,000	80,000
Black, non-Hispanic	43,000	30,000	42,000	45,000	50,000	38,000	30,000	39,400	42,000	45,000	48,000	30,000	48,000	50,000	48,300	60,000	S	54,000	59,700	62,000
Hispanic	45,000	32,000	47,500	53,000	55,000	41,000	32,000	45,000	48,000	48,000	52,000	35,000	49,000	56,000	60,000	65,000	S	56,000	60,000	71,400
American Indian/Alaskan Native	42,500	30,000	47,500	42,000	54,000	39,000	29,000	46,000	40,000	51,000	48,500	S	48,500	40,000	53,000	60,000	S	49,000	53,000	65,000
S&E occupations	60,000	43,000	60,000	67,000	70,000	59,000	42,000	58,200	65,000	66,000	64,000	45,000	60,000	70,000	69,300	70,000	50,000	60,000	68,000	77,000
White, non-Hispanic	61,000	42,000	60,000	67,900	70,000	60,000	42,000	59,000	65,000	67,600	64,400	41,000	60,000	70,000	69,300	70,000	45,000	59,000	68,000	76,600
Asian/Pacific Islander	63,000	50,000	62,000	69,000	70,000	58,000	45,000	58,000	65,000	62,000	65,300	57,000	65,000	70,000	72,800	71,000	61,000	68,000	70,000	80,000
Black, non-Hispanic	53,000	44,500	51,600	57,000	59,000	50,600	44,000	50,000	57,000	55,000	54,000	42,000	54,000	58,000	55,000	62,000	S	51,000	56,000	70,000
Hispanic	55,000	42,000	55,000	60,000	60,000	53,500	42,000	55,000	60,000	60,000	58,000	40,000	55,000	62,000	61,000	60,000	S	56,000	56,000	75,000
American Indian/Alaskan Native	50,000	36,000	49,000	45,000	70,000	45,000	35,000	46,000	S	S	54,000	S	S	S	S	60,000	S	55,000	53,000	64,000
Computer and mathematical scientists	64,000	50,000	63,000	68,500	66,000	60,800	50,000	61,000	65,000	64,000	68,000	59,000	65,000	72,000	69,000	72,000	65,000	66,000	75,000	74,500
White, non-Hispanic	65,000	50,000	63,000	69,200	67,000	62,200	50,000	63,000	66,400	65,000	68,000	55,000	65,000	72,000	70,000	72,000	54,300	60,000	75,000	75,000
Asian/Pacific Islander	65,000	58,000	65,000	71,100	68,000	60,000	53,000	60,000	68,600	60,000	70,000	61,000	70,000	77,000	70,000	73,000	S	72,000	75,000	72,000
Black, non-Hispanic	54,000	45,000	54,000	55,900	60,000	50,000	45,000	53,000	54,000	S	60,000	55,000	61,000	63,900	59,000	71,000	S	51,000	58,700	71,000
Hispanic	59,000	50,000	60,000	65,000	53,500	57,000	50,000	59,000	65,000	S	66,000	70,000	70,000	72,000	S	65,000	S	76,000	65,000	58,000
American Indian/Alaskan Native	54,000	S	33,000	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Life and related scientists	49,000	26,000	40,000	54,300	62,000	37,000	25,000	36,000	46,000	50,000	43,800	28,100	38,000	50,300	49,300	67,000	29,000	54,000	65,000	78,000
White, non-Hispanic	50,000	26,000	40,000	55,000	63,000	38,000	25,000	36,000	48,000	50,000	45,000	28,100	37,000	50,700	49,800	68,000	S	52,500	65,000	78,000
Asian/Pacific Islander	48,000	29,000	46,300	53,500	67,000	35,000	26,000	S	S	S	41,000	S	40,000	S	S	64,000	S	60,000	60,0uu	80,000
Black, non-Hispanic	44,000	S	41,000	44,300	56,800	S	S	S	S	S	42,000	S	S	S	S	58,000	S	49,000	55,000	72,000
Hispanic	36,000	20,000	40,000	47,000	46,000	28,500	20,000	S	S	S	40,000	S	S	S	S	63,000	S	52,000	65,000	81,000
American Indian/Alaskan Native	39,000	S	39,000	S	S	S	S	S	S	S	S	S	S	S	S	62,000	S	56,000	S	S
Physical and related scientists	52,000	31,000	48,000	60,000	68,900	45,000	30,000	41,600	52,000	55,200	52,000	29,000	48,000	60,000	62,000	71,000	50,000	60,000	71,000	80,000
White, non-Hispanic	53,000	30,000	47,500	60,500	69,900	45,000	30,000	42,000	53,400	60,000	55,000	28,500	48,000	63,000	62,000	72,700	49,400	59,400	72,000	81,000

See explantory information and SOURCE at end of table.

Appendix table 6-14

Median annual salary of full-time employed scientists and engineers, by broad occupation, race/ethnicity, highest degree level, and age group: 1999

(Dollars)

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Occupation and race/ethnicity[a]	All degrees[b]					Bachelor's					Master's					Doctorate				
	All ages	29 or younger	30-39	40-49	50 or older	All ages	29 or younger	30-39	40-49	50 or older	All ages	29 or younger	30-39	40-49	50 or older	All ages	29 or younger	30-39	40-49	50 or older
Asian/Pacific Islander	55,000	36,000	55,000	60,000	60,000	41,400	36,000	S	S	S	50,000	S	48,000	46,200	S	69,000	S	64,000	70,000	77,000
Black, non-Hispanic	43,000	29,000	41,700	44,700	53,000	43,000	S	S	S	S	44,700	S	S	S	S	60,000	S	60,000	55,000	75,000
Hispanic	43,000	29,000	39,000	46,600	70,000	37,000	29,000	S	S	S	36,000	S	39,000	S	S	67,000	S	61,700	52,500	76,000
American Indian/Alaskan Native	48,000	S	S	S	S	S	S	S	S	S	S	S	S	S	S	61,000	S	S	S	S
Social and related scientists	47,100	29,000	40,000	51,000	59,000	30,000	28,000	30,000	45,000	S	41,000	30,000	36,000	46,000	50,000	60,000	40,600	48,000	56,000	66,000
White, non-Hispanic	48,000	28,500	40,000	51,000	59,700	30,000	27,500	30,000	S	S	42,000	30,000	35,000	46,000	50,000	60,000	38,000	48,000	58,000	66,000
Asian/Pacific Islander	48,500	32,000	47,800	60,000	62,500	S	S	S	S	S	48,000	S	S	S	S	58,000	S	50,000	55,000	67,000
Black, non-Hispanic	40,000	19,000	30,000	45,000	52,000	S	S	S	S	S	35,000	S	33,000	S	S	60,000	S	46,000	53,000	67,000
Hispanic	40,000	26,000	42,000	42,000	45,000	27,000	24,000	S	S	S	42,000	S	42,000	S	S	52,000	S	47,500	47,000	70,500
American Indian/Alaskan Native	50,000	S	S	47,000	53,000	S	S	S	S	S	S	S	S	S	S	55,000	S	S	51,000	55,000
Engineers	65,000	46,000	60,000	70,000	74,500	60,000	45,000	59,900	68,500	70,000	70,000	50,000	64,000	75,000	79,100	80,000	62,000	70,600	78,700	90,000
White, non-Hispanic	65,000	45,000	60,000	70,000	75,000	62,000	45,000	60,000	70,000	70,000	71,000	49,500	65,000	75,000	80,000	80,000	65,000	71,000	80,000	92,000
Asian/Pacific Islander	64,800	48,000	61,000	70,000	72,000	59,100	45,000	59,000	64,000	63,000	68,000	55,000	60,000	70,000	75,000	78,000	56,000	72,000	76,000	90,000
Black, non-Hispanic	58,000	45,000	57,000	65,000	70,000	56,000	45,000	56,300	64,000	65,000	62,000	53,000	60,000	70,000	S	67,500	S	55,000	70,000	80,000
Hispanic	58,000	46,000	55,000	63,000	74,000	56,000	46,000	55,000	60,000	68,500	62,000	45,000	55,000	66,000	75,000	67,000	S	59,000	67,000	85,000
American Indian/Alaskan Native	57,000	S	52,000	60,000	S	55,000	S	S	S	S	S	S	S	S	S	83,000	S	S	S	S
Non-S&E occupations	50,000	30,000	48,000	55,000	57,000	41,800	30,000	42,500	48,000	50,000	53,000	35,000	50,000	57,000	55,000	70,200	45,000	60,000	70,000	75,000
White, non-Hispanic	50,000	30,000	49,000	59,000	60,000	43,000	30,000	44,000	50,000	52,000	55,000	35,000	50,000	59,000	56,000	72,000	35,000	60,000	72,000	77,000
Asian/Pacific Islander	46,800	36,000	50,000	50,000	50,000	40,000	35,000	45,000	40,000	43,000	54,000	46,000	55,000	60,000	53,600	75,000	S	56,000	85,000	80,000
Black, non-Hispanic	40,000	29,000	38,300	43,000	48,000	35,000	28,000	35,000	38,000	40,000	45,000	29,000	42,000	48,000	48,000	60,000	S	64,300	59,700	60,000
Hispanic	41,000	30,500	42,000	49,000	53,000	36,000	30,000	38,000	42,000	44,000	49,000	35,000	41,000	54,000	57,000	70,000	S	56,000	70,000	70,000
American Indian/Alaskan Native	40,000	27,000	45,500	40,000	52,000	36,800	27,000	39,000	38,000	50,000	45,000	S	S	40,000	52,000	50,000	S	S	52,500	65,000

S data with unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

[b] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Median salaries are rounded to nearest hundred dollars.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-15

Median annual salary of full-time employed scientists and engineers, by broad occupation, age group, sex, and race/ethnicity: 1999

(Dollars)

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Occupation and age	All races/ethnicities[a]			Whites, non-Hispanic			Asians/Pacific Islanders			Blacks, non-Hispanic			Hispanics			American Indians/ Alaskan Natives		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
All occupations	54,500	60,000	40,400	55,000	62,000	41,000	56,000	60,000	46,000	43,000	48,800	38,500	45,000	52,000	37,000	42,500	50,000	35,000
29 or younger	34,000	39,000	30,000	33,900	38,000	30,000	42,000	46,000	38,000	30,000	35,000	29,000	32,000	36,000	30,000	30,000	35,000	26,000
30–39	53,000	59,000	43,000	54,000	60,000	43,200	60,000	61,800	52,000	42,000	49,000	38,000	47,500	51,300	40,000	47,500	49,000	40,000
40–49	60,000	67,500	46,000	62,000	69,000	47,000	61,000	67,000	52,000	45,000	50,000	42,000	53,000	58,400	45,000	42,000	49,800	37,500
50 or older	60,000	68,400	46,000	62,300	70,000	47,000	60,000	68,000	46,000	50,000	53,000	45,000	55,000	60,000	43,000	54,000	57,000	50,000
S&E occupations	60,000	64,000	50,300	61,000	65,000	50,000	63,000	65,000	57,500	53,000	55,000	48,000	55,000	58,000	45,000	50,000	53,000	42,000
29 or younger	43,000	45,000	38,000	42,000	44,900	36,000	50,000	51,000	45,000	44,500	45,000	41,000	42,000	45,000	33,000	36,000	45,000	S
30–39	60,000	60,000	52,000	60,000	60,000	50,000	62,000	63,000	60,000	51,600	52,500	50,000	55,000	56,000	50,000	49,000	48,000	52,500
40–49	67,000	70,000	58,000	67,900	70,000	57,000	69,000	70,000	64,000	57,000	58,000	55,000	60,000	62,000	50,000	45,000	60,000	43,100
50 or older	70,000	71,400	55,000	70,000	72,000	56,000	70,000	70,000	60,000	59,000	60,000	50,000	60,000	68,500	45,000	70,000	70,000	64,000
Computer and mathematical scientists	64,000	66,000	58,000	65,000	66,500	57,000	65,000	68,000	62,700	54,000	55,000	50,000	59,000	60,000	56,000	54,000	55,000	S
29 or younger	50,000	52,800	47,000	50,000	50,000	47,000	58,000	59,000	55,000	45,000	50,000	44,000	50,000	50,000	51,000	S	S	S
30–39	63,000	65,000	58,000	63,000	65,000	57,500	65,000	70,000	62,000	54,000	53,200	54,000	60,000	60,000	58,600	33,000	S	S
40–49	68,500	70,000	60,000	69,200	70,000	60,000	71,100	76,500	69,000	55,900	60,000	54,000	65,000	68,000	57,000	S	S	S
50 or older	66,000	70,000	60,000	67,000	70,000	60,000	68,000	70,000	60,000	60,000	59,000	66,000	53,500	60,000	S	S	S	S
Life and related scientists	49,000	52,000	40,000	50,000	52,700	40,000	48,000	52,000	42,000	44,000	51,000	36,000	36,000	40,000	34,000	39,000	36,000	46,100
29 or younger	26,000	25,000	26,000	26,000	25,000	27,000	29,000	32,000	26,000	S	S	S	20,000	S	23,700	S	S	S
30–39	40,000	42,000	38,000	40,000	41,800	37,000	46,300	47,700	46,300	41,000	47,100	35,000	40,000	38,000	40,000	39,000	S	S
40–49	54,300	55,000	54,000	55,000	56,000	55,000	53,500	56,000	51,200	44,300	47,000	40,000	47,000	48,000	40,000	S	S	S
50 or older	62,000	67,000	49,300	63,000	67,000	49,300	67,000	70,000	50,000	58,800	57,000	42,000	46,000	80,500	S	S	S	S
Physical and related scientists	52,000	56,600	41,400	53,000	58,000	41,000	55,000	60,000	50,000	43,000	43,000	43,000	43,000	46,000	30,000	48,000	48,500	S
29 or younger	31,000	28,000	32,000	30,000	28,000	32,000	36,000	36,000	S	29,000	S	S	29,000	28,800	S	S	S	S
30–39	48,000	50,000	41,400	47,500	50,000	40,000	55,000	54,000	55,000	41,700	45,000	38,000	39,000	46,000	28,800	S	S	S
40–49	60,000	62,500	51,000	60,500	63,000	50,000	60,000	64,000	55,000	44,700	38,000	S	46,600	48,000	S	S	S	S
50 or older	68,900	71,000	50,000	69,500	72,000	49,000	60,000	71,600	52,000	53,000	55,000	S	70,000	76,000	S	S	S	S
Social and related scientists	47,100	54,000	40,000	48,000	55,000	41,000	48,500	60,000	36,000	40,000	45,000	38,000	40,000	46,000	38,000	50,000	49,000	52,500
29 or younger	29,000	30,000	28,000	28,500	29,000	28,000	32,000	S	30,000	19,000	S	S	26,000	S	24,000	S	S	S
30–39	40,000	46,000	37,000	40,000	46,000	37,000	47,800	52,000	36,000	30,000	27,000	30,000	42,000	46,000	38,000	S	S	S
40–49	51,000	55,300	46,700	51,000	55,300	47,000	60,000	67,000	50,000	45,000	45,000	48,000	42,000	54,800	42,000	47,000	S	S
50 or older	59,000	62,000	52,800	59,700	63,000	53,000	62,500	68,000	50,000	52,000	60,000	40,600	45,000	62,000	45,000	53,000	S	S

See explanatory information and SOURCE at end of table.

Appendix table 6-15

Median annual salary of full-time employed scientists and engineers, by broad occupation, age group, sex, and race/ethnicity: 1999

(Dollars)

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Occupation and age	All races/ethnicities[a]			Whites, non-Hispanic			Asians/Pacific Islanders			Blacks, non-Hispanic			Hispanics			American Indians/ Alaskan Natives		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Engineers	65,000	65,000	55,700	65,000	65,900	55,000	64,800	65,000	60,000	58,000	59,000	57,000	58,000	59,000	52,000	57,000	60,000	S
29 or younger	46,000	46,000	45,000	45,000	45,000	45,000	48,000	49,000	47,000	45,000	45,000	46,800	46,000	46,000	43,000	S	S	S
30–39	60,000	60,000	58,200	60,000	61,000	58,000	61,000	60,000	64,000	57,000	57,000	57,000	55,000	55,000	55,000	52,000	52,000	S
40–49	70,000	70,000	64,000	70,000	71,500	63,000	70,000	70,000	60,000	65,000	63,000	S	63,000	63,000	59,500	60,000	S	S
50 or older	74,500	75,000	66,000	75,000	75,000	66,000	72,000	72,000	60,000	70,000	70,000	S	74,000	74,000	S	S	S	S
Non-S&E occupations	50,000	60,000	38,500	50,000	60,000	39,000	46,800	52,000	40,300	40,000	45,000	37,000	41,000	48,000	35,000	40,000	49,000	32,000
29 or younger	30,000	34,000	29,100	30,000	34,000	29,000	36,000	36,500	35,000	29,000	31,000	28,000	30,500	32,500	30,000	27,000	33,000	24,000
30–39	48,000	54,500	40,000	49,000	55,000	40,000	50,000	59,000	44,000	38,300	44,000	35,000	42,000	45,000	36,000	45,500	50,000	36,800
40–49	55,000	65,000	43,000	59,000	67,700	44,000	50,000	59,000	41,000	43,000	45,000	41,400	49,000	55,000	45,000	40,000	45,000	37,500
50 or older	57,000	65,000	43,600	60,000	66,000	44,000	50,000	56,000	42,000	48,000	50,000	44,000	53,000	58,000	42,900	52,000	52,000	42,000

S data with unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Median salaries are rounded to nearest hundred dollars.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-16

Median annual salary of full-time employed scientists and engineers, by broad occupation, age group, disability status, and highest degree level: 1999

(Dollars)

Page 1 of 2

Occupation and age	All degree levels[a]			Bachelor's			Master's			Doctorate		
	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities
All occupations	54,500	55,000	52,000	49,000	49,000	48,800	58,000	58,000	53,000	70,000	70,000	70,000
29 or younger	34,000	34,100	31,000	32,700	33,000	30,000	38,500	39,000	35,000	49,000	52,000	S
30–39	53,000	53,000	48,000	50,000	50,000	45,000	56,000	56,000	45,000	60,000	60,000	55,500
40–49	60,000	60,700	52,000	55,000	55,800	48,000	61,300	62,000	57,500	69,000	70,000	65,000
50 or older	60,000	62,000	55,000	56,000	57,200	52,000	60,000	60,000	53,000	76,000	77,000	72,000
S&E occupations	60,000	60,000	61,600	59,000	59,000	60,000	64,000	64,000	63,000	70,000	70,000	72,500
29 or younger	43,000	43,000	42,000	42,000	42,000	40,000	45,000	45,000	46,000	50,000	50,000	S
30–39	60,000	60,000	55,000	58,200	58,500	54,000	60,000	60,000	56,000	60,000	60,000	64,000
40–49	67,000	67,000	63,800	65,000	65,000	60,000	70,000	70,000	73,600	68,000	68,000	70,000
50 or older	70,000	70,000	65,000	66,000	67,000	63,000	69,300	70,000	65,000	77,000	78,000	75,000
Computer/mathematical scientists	64,000	64,000	63,000	60,800	60,700	61,800	68,000	68,000	65,000	72,000	72,000	68,000
29 or younger	50,000	50,000	52,000	50,000	50,000	S	59,000	60,000	S	65,000	65,000	S
30–39	63,000	63,000	60,000	61,000	61,000	60,000	65,000	65,000	68,000	66,000	67,000	60,000
40–49	68,500	69,000	65,000	65,000	66,000	63,000	72,000	72,000	73,600	75,000	75,000	72,000
50 or older	66,000	66,800	64,700	64,000	64,000	64,700	69,000	69,100	62,000	74,500	75,000	68,000
Life and related scientists	49,000	48,000	54,000	37,000	36,000	44,700	43,800	43,000	45,000	67,000	67,000	70,000
29 or younger	26,000	26,000	S	25,000	25,000	S	28,100	28,100	S	29,000	29,000	S
30–39	40,000	40,000	40,000	36,000	36,000	S	38,000	39,000	S	54,000	54,000	55,000
40–49	54,300	54,000	55,000	46,000	46,000	S	50,300	50,000	S	65,000	65,000	65,000
50 or older	62,000	65,000	55,000	50,000	51,000	S	49,300	49,300	S	78,000	78,500	72,000
Physical and related scientists	52,000	52,000	52,000	45,000	45,000	48,800	52,000	53,000	45,000	71,000	70,200	75,000
29 or younger	31,000	31,000	S	30,000	30,000	S	29,000	28,500	S	50,000	50,000	S
30–39	48,000	49,000	40,000	41,600	41,700	S	48,000	50,000	S	60,000	60,000	47,000
40–49	60,000	60,000	52,000	52,000	53,400	S	60,000	60,000	S	71,000	70,300	78,000
50 or older	68,900	70,000	60,000	55,200	55,900	S	62,000	62,000	S	80,000	80,000	77,200
Social and related scientists	47,100	47,000	50,000	30,000	30,000	S	41,000	41,000	40,0	60,000	60,000	65,000
29 or younger	29,000	29,000	S	28,000	28,000	S	30,000	30,000	S	40,600	38,000	S
30–39	40,000	40,000	35,000	30,000	30,000	S	36,000	36,000	S	48,000	48,000	73,000
40–49	51,000	50,200	59,000	45,000	45,000	S	46,000	45,000	S	56,000	56,000	60,000
50 or older	59,000	60,000	56,000	S	S	S	50,000	50,000	S	66,000	66,000	67,000

See explanatory information and SOURCE at end of table.

Appendix table 6-16

Median annual salary of full-time employed scientists and engineers, by broad occupation, age group, disability status, and highest degree level: 1999

(Dollars)

Page 2 of 2

Occupation and age	All degree levels[a]			Bachelor's			Master's			Doctorate		
	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities	Total	Without disabilities	With disabilities
Engineers	65,000	65,000	67,000	60,000	60,000	61,800	70,000	70,000	75,000	80,000	79,000	86,000
29 or younger	46,000	46,000	41,000	45,000	45,000	41,000	50,000	50,000	S	62,000	62,000	S
30–39	60,000	60,000	56,000	59,900	60,000	55,000	64,000	64,000	57,000	70,600	70,200	75,000
40–49	70,000	70,000	66,500	68,500	69,000	65,000	75,000	75,000	75,000	78,700	78,000	85,000
50 or older	74,500	75,000	72,000	70,000	70,000	67,600	79,100	79,000	84,500	90,000	90,000	95,000
Non-S&E occupations	50,000	50,000	47,000	41,800	41,600	42,000	53,000	54,000	50,000	70,200	72,000	60,000
29 or younger	30,000	30,000	28,000	30,000	30,000	27,000	35,000	35,000	S	45,000	60,000	S
30–39	48,000	48,000	40,000	42,500	42,900	40,000	50,000	50,000	38,000	60,000	60,000	S
40–49	55,000	56,200	48,000	48,000	49,000	43,000	57,000	58,000	53,000	70,000	72,000	54,000
50 or older	57,000	59,000	50,000	50,000	50,000	45,000	55,000	56,000	50,000	75,000	75,000	66,500

S data with unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Median salaries are rounded to nearest hundred dollars.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-17

Primary education, employment status, and median salary of recipients of S&E bachelor's degrees in 1996/97 and 1997/98, by broad field of degree, sex, race/ethnicity, and disability status: 1999

Page 1 of 2

Field of degree, sex, race/ethnicity, and disability status	All S&E bachelor's degree recipients	Primary education and employment status in April 1999				Median salary for full-time employed[a]
		Full-time student	Not full-time student			
			Employed in an S&E occupation	Employed in a non-S&E occupation	Not employed	
	Number					Dollars
All S&E fields	743,400	165,500	161,900	377,300	38,800	30,000
Male	366,800	77,900	112,900	162,300	13,700	35,000
Female	376,600	87,600	49,000	215,000	25,100	26,600
White, non-Hispanic	561,300	121,900	119,900	292,600	26,900	30,000
Asian/Pacific Islander	71,600	19,400	21,700	26,100	4,400	36,000
Black, non-Hispanic	51,600	10,600	8,300	29,900	2,900	29,000
Hispanic	54,100	12,300	11,500	26,500	3,900	30,000
American Indian/Alaskan Native	4,800	S	500	2,300	S	24,000
Without disabilities	715,600	159,500	157,300	362,400	36,300	30,000
With disabilities	27,900	5,900	4,500	14,900	S	27,300
Sciences	628,800	150,800	83,100	359,300	35,500	27,900
Male	274,800	66,900	48,500	147,900	11,400	30,000
Female	354,000	83,900	34,600	211,400	24,200	26,000
White, non-Hispanic	478,100	112,600	60,200	280,600	24,800	27,000
Asian/Pacific Islander	54,300	15,500	11,400	23,600	3,700	32,500
Black, non-Hispanic	45,800	9,900	5,100	27,900	2,800	27,000
Hispanic	46,200	11,700	6,200	24,900	3,400	28,000
American Indian/Alaskan Native	4,300	S	S	2,200	S	24,000
Without disabilities	604,000	145,600	80,600	344,700	33,100	28,000
With disabilities	24,800	5,200	2,500	14,600	S	26,000
Computer/math sciences	69,800	7,100	30,900	29,000	2,700	41,000
Male	46,900	5,000	22,500	17,800	S	43,000
Female	22,900	2,100	8,400	11,200	S	38,000
White, non-Hispanic	49,200	4,900	21,400	20,800	S	41,000
Asian/Pacific Islander	9,200	S	4,100	3,800	S	42,000
Black, non-Hispanic	6,500	S	2,900	2,700	S	38,000
Hispanic	4,600	S	2,500	1,600	S	44,000
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	66,700	6,700	29,700	27,600	2,700	41,500
With disabilities	3,100	S	S	S	S	34,000
Life and related sciences	164,000	54,300	20,900	79,100	9,800	25,000
Male	73,000	25,000	9,000	36,000	2,900	26,500
Female	91,100	29,300	11,800	43,100	6,900	25,000
White, non-Hispanic	123,300	37,900	15,500	63,700	6,200	25,000
Asian/Pacific Islander	21,200	9,700	S	6,400	S	28,000
Black, non-Hispanic	9,000	3,100	S	4,600	S	25,000
Hispanic	9,700	3,400	S	4,100	S	28,000
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	158,100	51,800	20,200	76,900	9,100	25,000
With disabilities	6,000	S	S	S	S	S

See explanatory information and SOURCE at end of table.

Appendix table 6-17

Primary education, employment status, and median salary of recipients of S&E bachelor's degrees in 1996/97 and 1997/98, by broad field of degree, sex, race/ethnicity, and disability status: 1999

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Field of degree, sex, race/ethnicity, and disability status	All S&E bachelor's degree recipients	Primary education and employment status in April 1999				Median salary for full-time employed[a]
			Not full-time student			
		Full-time student	Employed in an S&E occupation	Employed in a non-S&E occupation	Not employed	
	Number					Dollars
Physical and related sciences	36,500	12,600	11,100	11,900	1,000	28,500
Male	22,500	7,500	7,400	7,000	S	30,000
Female	14,100	5,100	3,600	4,900	S	27,500
White, non-Hispanic	29,800	10,000	9,100	9,900	800	28,000
Asian/Pacific Islander	2,900	1,400	S	S	S	31,000
Black, non-Hispanic	2,100	800	500	700	S	30,000
Hispanic	1,600	400	S	700	S	26,400
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	35,400	12,200	10,800	11,500	900	28,500
With disabilities	1,200	S	S	S	S	S
Social and related sciences	358,500	76,800	20,300	239,300	22,000	26,500
Male	132,500	29,400	9,600	87,000	6,400	30,000
Female	226,000	47,400	10,800	152,300	15,600	25,000
White, non-Hispanic	275,800	59,800	14,300	186,300	15,500	26,000
Asian/Pacific Islander	21,000	S	S	13,100	S	31,000
Black, non-Hispanic	28,200	5,300	S	19,900	2,100	26,000
Hispanic	30,300	7,500	1,900	18,500	2,400	27,000
American Indian/Alaskan Native	3,100	S	S	S	S	S
Without disabilities	343,900	74,900	19,900	228,600	20,400	26,600
With disabilities	14,600	S	S	10,700	S	25,000
Engineering	114,600	14,600	78,700	18,000	3,300	42,500
Male	92,000	10,900	64,400	14,400	2,300	43,000
Female	22,600	3,700	14,400	3,600	900	42,000
White, non-Hispanic	83,100	9,400	59,700	12,000	2,100	42,000
Asian/Pacific Islander	17,300	3,900	10,300	2,500	S	45,000
Black, non-Hispanic	5,800	700	3,100	2,000	S	40,000
Hispanic	7,900	600	5,300	1,600	400	42,000
American Indian/Alaskan Native	400	S	S	S	S	S
Without disabilities	111,500	13,900	76,700	17,700	3,200	42,000
With disabilities	3,100	S	2,000	S	S	48,000

S data with weighted values less than 100 or unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Salary data exclude the self-employed and full-time students, and are for principal job only. Full-time employment is defined as working at one's principal job at least 35 hours a week.

NOTES: Includes all those who received S&E bachelor's degrees between July 1996 and June 1998. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding. Totals include those of other or unknown race/ethnicity.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates.

Appendix table 6-18

Primary education, employment status, and median salary of recipients of S&E master's degrees in 1996/97 and 1997/98, by broad field of degree, sex, race/ethnicity, and disability status: 1999

Page 1 of 2

Field of degree, sex, race/ethnicity, and disability status	All S&E master's degree recipients	Primary education and employment status in April 1999				Median salary for full-time employed[a]
		Full-time student	Not full-time student			
			Employed in an S&E occupation	Employed in a non-S&E occupation	Not employed	
	Number					Dollars
All S&E fields	157,000	32,100	71,800	46,300	6,800	46,000
Male	91,700	20,400	49,800	18,900	2,600	50,200
Female	65,300	11,800	22,100	27,400	4,100	38,000
White, non-Hispanic	104,400	21,400	44,500	33,900	4,600	43,000
Asian/Pacific Islander	35,800	7,500	21,400	5,500	1,400	55,000
Black, non Hispanic	8,400	1,500	2,500	4,100	S	42,000
Hispanic	7,700	1,600	3,300	2,600	S	40,000
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	149,900	31,000	68,600	44,500	5,800	46,000
With disabilities	7,100	1,100	3,200	1,800	S	46,000
Sciences	110,400	24,300	39,400	41,200	5,500	40,000
Male	53,600	13,900	22,700	15,000	2,000	46,000
Female	56,800	10,400	16,700	26,200	3,500	36,000
White, non-Hispanic	77,200	17,300	24,800	30,700	4,300	38,000
Asian/Pacific Islander	20,000	4,400	10,900	4,100	S	54,000
Black, non-Hispanic	6,800	1,100	1,500	3,900	S	40,000
Hispanic	5,700	1,200	2,000	2,300	S	37,200
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	104,900	23,300	37,200	39,600	4,700	40,000
With disabilities	5,500	S	2,200	1,600	S	40,000
Computer/math sciences	27,200	3,300	17,400	5,400	S	55,000
Male	18,500	2,500	12,000	3,300	S	56,700
Female	8,700	S	5,400	2,100	S	53,000
White, non-Hispanic	13,200	2,200	7,300	3,100	S	52,500
Asian/Pacific Islander	12,000	S	8,900	2,000	S	57,000
Black, non-Hispanic	1,000	S	600	S	S	53,500
Hispanic	700	S	S	S	S	S
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	25,400	2,900	16,300	5,400	S	55,000
With disabilities	1,800	S	S	S	S	58,000
Life and related sciences	16,600	4,900	5,000	6,000	S	34,000
Male	9,100	3,600	2,500	2,700	S	36,000
Female	7,500	1,400	2,500	3,300	S	33,000
White, non-Hispanic	12,200	3,000	4,000	4,800	S	35,000
Asian/Pacific Islander	3,000	1,700	S	S	S	S
Black, non-Hispanic	600	S	S	S	S	S
Hispanic	700	S	S	S	S	S
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	16,400	4,900	5,000	6,000	S	34,000
With disabilities	S	S	S	S	S	S

See explanatory information and SOURCE at end of table.

Appendix table 6-18

Primary education, employment status, and median salary of recipients of S&E master's degrees in 1996/97 and 1997/98, by broad field of degree, sex, race/ethnicity, and disability status: 1999

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Field of degree, sex, race/ethnicity, and disability status	All S&E master's degree recipients	Primary education and employment status in April 1999				Median salary for full-time employed[a]
		Full-time student	Not full-time student			
			Employed in an S&E occupation	Employed in a non-S&E occupation	Not employed	
	Number					Dollars
Physical and related sciences	9,100	2,900	4,100	1,600	S	41,600
Male	5,800	2,100	2,900	700	S	42,000
Female	3,200	800	1,200	900	S	40,000
White, non-Hispanic	6,500	2,000	3,000	1,300	S	40,000
Asian/Pacific Islander	1,800	800	S	S	S	47,000
Black, non-Hispanic	S	S	S	S	S	S
Hispanic	400	S	S	S	S	S
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	8,800	2,800	4,000	1,600	S	41,600
With disabilities	S	S	S	S	S	S
Social and related sciences	57,600	13,100	12,800	28,100	3,500	35,000
Male	20,200	5,800	5,200	8,200	S	40,000
Female	37,400	7,300	7,500	19,900	2,600	33,000
White, non-Hispanic	45,200	10,200	10,600	21,500	2,900	34,500
Asian/Pacific Islander	3,100	S	S	S	S	36,000
Black, non-Hispanic	4,900	900	S	3,300	S	35,600
Hispanic	3,900	S	1,100	1,900	S	37,000
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	54,300	12,600	12,000	26,700	3,000	36,000
With disabilities	3,300	S	S	1,500	S	29,000
Engineering	46,700	7,900	32,500	5,100	1,300	55,000
Male	38,100	6,500	27,100	3,900	700	55,000
Female	8,500	1,400	5,400	1,200	S	50,000
White, non-Hispanic	27,200	4,000	19,600	3,200	S	54,000
Asian/Pacific Islander	15,800	3,100	10,400	1,400	S	57,000
Black, non-Hispanic	1,600	S	1,000	S	S	53,000
Hispanic	2,000	S	1,300	S	S	47,000
American Indian/Alaskan Native	S	S	S	S	S	S
Without disabilities	45,000	7,700	31,400	4,800	1,100	55,000
With disabilities	1,600	S	1,100	S	S	52,000

S data with weighted values less than 100 or unweighted sample sizes less than 20 are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Salary data exclude the self-employed and full-time students, and are for principal job only. Full-time employment is defined as working at one's principal job at least 35 hours a week.

NOTES: Includes all those who received S&E master's degrees between July 1996 and June 1998. Figures are rounded to the nearest hundred. Details may not add to totals because of rounding. Totals include those of other or unknown race/ethnicity.

SOURCE: National Science Foundation, Division of Science Resources Statistics, National Survey of Recent College Graduates.

Appendix table 6-19

Employment status and median salary of recipients of S&E doctoral degrees in 1996/97 and 1997/98, by broad field of doctorate, sex, race/ethnicity, and disability status: 1999

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Field of degree, sex, race/ethnicity, and disability status	All S&E doctorate recipients[a]	Employment status: Employed: Full time	Employment status: Employed: Part time	Employment status: Employed: Postdoctoral appointment[b]	Employment status: Not employed: Not employed, seeking work	Employment status: Not employed: Not employed and not seeking work	Median salary for full-time employed[c]
	Number						Dollars
All S&E fields	50,300	32,700	2,300	13,200	600	1,500	55,200
Male	32,300	23,000	800	7,800	200	400	59,500
Female	18,000	9,700	1,500	5,400	400	1,000	48,900
White, non-Hispanic	33,600	22,200	1,900	8,200	400	900	52,000
Asian/Pacific Islander	12,900	8,100	200	4,000	100	400	63,000
Black, non-Hispanic	1,600	1,100	100	300	S	S	45,000
Hispanic	1,900	1,100	100	700	S	100	50,000
American Indian/Alaskan Native	200	100	S	100	S	S	52,000
Without disabilities	48,700	31,600	2,200	13,000	500	1,400	55,500
With disabilities	1,600	1,100	100	200	S	S	55,000
Sciences	39,800	23,600	2,200	12,200	400	1,300	50,000
Male	23,100	14,900	700	7,000	100	400	51,000
Female	16,600	8,700	1,400	5,200	300	900	46,400
White, non-Hispanic	27,900	17,300	1,800	7,700	300	900	48,000
Asian/Pacific Islander	8,800	4,400	200	3,700	100	400	60,000
Black, non-Hispanic	1,400	1,000	100	300	S	S	44,400
Hispanic	1,500	800	100	600	S	100	40,000
American Indian/Alaskan Native	200	100	S	100	S	S	48,000
Without disabilities	38,500	22,700	2,000	12,000	400	1,300	50,000
With disabilities	1,300	900	100	200	S	S	52,000
Computer/math sciences	3,600	2,800	200	500	S	S	60,000
Male	2,800	2,300	S	400	S	S	60,000
Female	700	500	100	100	S	S	58,000
White, non-Hispanic	2,300	1,700	100	400	S	S	55,000
Asian/Pacific Islander	1,100	1,000	S	100	S	S	66,000
Black, non-Hispanic	100	S	S	S	S	S	S
Hispanic	100	100	S	S	S	S	65,000
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	3,400	2,600	100	500	S	S	60,000
With disabilities	200	200	S	S	S	S	47,500
Life and related sciences	15,500	6,800	500	7,300	200	600	47,000
Male	8,400	4,000	100	4,000	S	200	46,000
Female	7,000	2,900	400	3,300	100	400	50,000
White, non-Hispanic	10,100	5,000	400	4,300	100	300	46,000
Asian/Pacific Islander	4,200	1,300	100	2,500	S	300	52,000
Black, non-Hispanic	500	300	S	100	S	S	43,000
Hispanic	600	300	S	300	S	S	44,400
American Indian/Alaskan Native	100	S	S	S	S	S	S
Without disabilities	15,000	6,600	500	7,200	100	600	47,000
With disabilities	400	200	S	100	S	S	52,000

See explanatory information and SOURCE at end of table.

Appendix table 6-19

Employment status and median salary of recipients of S&E doctoral degrees in 1996/97 and 1997/98, by broad field of doctorate, sex, race/ethnicity, and disability status: 1999

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Field of degree, sex, race/ethnicity, and disability status	All S&E doctorate recipients[a]	Employment status					Median salary for full-time employed[c]
		Employed			Not employed		
		Full time	Part time	Postdoctoral appointment[b]	Not employed, seeking work	Not employed and not seeking work	
	Number						Dollars
Physical and related sciences	8,300	4,900	200	3,000	S	100	60,000
Male	6,400	3,900	200	2,300	S	S	60,000
Female	1,800	1,000	S	700	S	100	58,000
White, non-Hispanic	5,600	3,400	200	1,900	S	100	59,500
Asian/Pacific Islander	2,300	1,300	S	900	S	S	61,300
Black, non-Hispanic	200	100	S	S	S	S	57,000
Hispanic	200	100	S	100	S	S	36,000
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	8,100	4,800	200	2,900	S	100	60,000
With disabilities	200	200	S	100	S	S	58,000
Social and related sciences	12,500	9,000	1,300	1,400	200	500	45,000
Male	5,[illegible]00	4,700	300	300	S	S	45,000
Female	7,000	4,400	900	1,100	200	500	44,000
White, non-Hispanic	9,900	7,200	1,100	1,100	200	400	44,100
Asian/Pacific Islander	1,200	900	100	100	S	100	57,000
Black, non-Hispanic	700	600	S	100	S	S	41,800
Hispanic	600	400	100	100	S	S	36,000
American Indian/Alaskan Native	100	S	S	S	S	S	S
Without disabilities	12,000	8,700	1,200	1,400	200	500	45,000
With disabilities	500	300	S	S	S	S	45,000
Engineering	10,500	9,100	100	1,000	100	100	67,000
Male	9,100	8,200	S	800	S	100	67,000
Female	1,400	1,000	100	200	S	S	65,000
White, non-Hispanic	5,700	5,000	100	500	S	S	66,300
Asian/Pacific Islander	4,100	3,700	S	300	S	S	68,000
Black, non-Hispanic	200	100	S	100	S	S	70,000
Hispanic	500	300	S	100	S	S	65,000
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	10,300	8,900	100	1,000	100	100	67,000
With disabilities	300	300	S	S	S	S	65,000

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately because of too few cases.

[b] Postdoctoral appointments are reported separately from full-time and part-time employment.

[c] Salary data exclude the self-employed and full-time students, and are for principal job only. Full-time employment is defined as working at one's principal job at least 35 hours a week.

NOTES: Figures are rounded to the nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

Appendix table 6-20

Career-path job search limitations of recipients of S&E doctoral degrees in 1996/97 and 1997/98, by broad field of doctorate, sex, race/ethnicity, and disability status: 1999

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Field of degree, sex, race/ethnicity, and disability status	All S&E doctorate recipients[a]	Total who sought or held a career-path job	Career-path job search limited "a great deal" or "somewhat" by...				
			Family responsibilities	Spouse's career or employment	Debt burden from undergraduate or graduate degrees	Desire to not relocate or move to place of job	Suitable job not available
	Number		Percent citing limitation				
All S&E fields	50,300	44,400	38.8	36.8	17.4	37.6	37.6
Male	32,300	28,200	39.5	31.4	17.2	33.9	38.4
Female	18,000	16,200	37.4	46.2	17.7	44.0	36.1
White, non-Hispanic	33,600	31,000	38.4	37.6	18.3	40.8	34.7
Asian/Pacific Islander	12,900	10,000	40.6	36.5	11.8	28.8	47.0
Black, non Hispanic	1,600	1,400	30.3	25.9	26.5	31.2	31.0
Hispanic	1,900	1,800	38.4	31.1	25.3	34.7	38.7
American Indian/Alaskan Native	200	200	39.3	31.5	S	30.3	29.3
Without disabilities	48,700	42,900	39.0	36.9	17.4	37.5	37.7
With disabilities	1,600	1,500	33.3	33.8	18.0	41.0	35.0
Sciences	39,800	35,100	39.2	37.7	18.6	38.2	38.7
Male	23,100	20,100	40.8	32.3	18.9	33.7	40.3
Female	16,600	15,000	37.1	44.9	18.2	44.2	36.5
White, non Hispanic	27,900	25,700	38.2	38.0	19.6	41.0	36.4
Asian/Pacific Islander	8,800	6,600	45.0	39.8	10.9	29.4	48.4
Black, non Hispanic	1,400	1,300	28.1	24.5	27.6	29.9	30.8
Hispanic	1,500	1,400	35.5	31.3	26.7	32.5	38.9
American Indian/Alaskan Native	200	100	68.3	S	S	S	58.7
Without disabilities	38,500	33,900	39.4	37.7	18.6	38.0	38.8
With disabilities	1,300	1,200	32.9	36.9	17.7	43.7	34.8
Computer/math sciences	3,600	2,900	41.4	40.5	10.0	43.7	33.4
Male	2,800	2,300	43.0	37.8	11.9	44.6	34.7
Female	700	600	35.3	51.0	S	40.3	28.3
White, non-Hispanic	2,300	2,000	41.8	41.4	9.2	43.8	33.7
Asian/Pacific Islander	1,100	800	38.6	37.1	9.0	43.9	31.5
Black, non-Hispanic	100	100	S	S	S	S	S
Hispanic	100	100	S	S	S	S	S
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	3,400	2,800	41.8	40.5	10.4	43.4	31.7
With disabilities	200	200	S	S	S	25.1	39.6
Life and related sciences	15,500	13,400	42.6	40.5	18.7	36.5	34.4
Male	8,400	7,200	44.8	34.3	21.7	30.6	36.1
Female	7,000	6,200	39.9	47.7	15.2	43.5	32.5
White, non-Hispanic	10,100	9,300	38.8	38.1	21.3	39.1	28.1
Asian/Pacific Islander	4,200	3,000	55.1	52.4	10.4	31.7	53.6
Black, non-Hispanic	500	400	41.1	28.5	S	30.6	31.2
Hispanic	600	600	36.5	28.4	28.3	23.0	35.2
American Indian/Alaskan Native	100	100	S	S	S	S	S
Without disabilities	15,000	13,000	42.9	40.8	18.8	36.9	34.9
With disabilities	400	400	31.8	30.7	16.1	25.8	18.4

See explanatory information and SOURCE at end of table.

Appendix table 6-20

Career-path job search limitations of recipients of S&E doctoral degrees in 1996/97 and 1997/98, by broad field of doctorate, sex, race/ethnicity, and disability status: 1999

Page 2 of 2

Field of degree, sex, race/ethnicity, and disability status	All S&E doctorate recipients[a]	Total who sought or held a career-path job	Career-path job search limited "a great deal" or "somewhat" by... Family responsibilities	Spouse's career or employment	Debt burden from undergraduate or graduate degrees	Desire to not relocate or move to place of job	Suitable job not available
	Number		Percent citing limitation				
Physical and related sciences	8,300	7,200	38.5	33.8	14.2	32.2	44.3
Male	6,400	5,600	40.5	30.2	13.7	30.4	42.3
Female	1,800	1,700	29.4	43.9	14.8	36.1	48.3
White, non-Hispanic	5,600	5,200	39.8	37.4	14.1	36.0	42.0
Asian/Pacific Islander	2,300	1,700	35.5	22.2	12.4	20.3	52.6
Black, non-Hispanic	200	100	S	51.5	62.1	S	S
Hispanic	200	100	S	51.6	S	70.1	59.2
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	8,100	7,000	38.0	33.6	14.0	32.0	43.8
With disabilities	200	200	52.6	S	S	36.2	62.2
Social and related sciences	12,500	11,600	35.2	36.1	23.2	42.4	41.5
Male	5,400	5,000	34.2	29.1	23.7	36.8	46.8
Female	7,000	6,500	36.5	41.9	23.3	47.3	38.0
White, non-Hispanic	9,900	9,300	35.4	37.0	23.0	44.6	41.8
Asian/Pacific Islander	1,200	1,000	40.1	38.4	12.3	29.3	43.7
Black, non-Hispanic	700	700	18.7	16.9	33.1	32.3	29.1
Hispanic	600	600	34.6	33.3	30.9	38.4	44.0
American Indian/Alaskan Native	100	S	S	S	S	S	S
Without disabilities	12,000	11,100	35.6	35.9	23.3	41.6	42.1
With disabilities	500	500	26.1	39.1	21.4	59.8	28.1
Engineering	10,500	9,300	37.2	33.4	12.9	35.4	33.3
Male	9,100	8,100	36.5	29.2	13.2	34.5	33.7
Female	1,400	1,200	41.5	62.1	11.4	41.3	30.2
White, non-Hispanic	5,700	5,300	39.6	36.0	12.1	39.7	26.2
Asian/Pacific Islander	4,100	3,400	32.3	29.9	13.7	27.5	44.3
Black, non-Hispanic	200	100	58.8	S	S	S	S
Hispanic	500	400	48.6	S	S	S	37.9
American Indian/Alaskan Native	S	S	S	S	S	S	S
Without disabilities	10,300	9,000	37.2	33.8	12.7	35.6	33.2
With disabilities	300	200	52.5	32.3	S	45.0	54.1

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

[a] Total includes "other" race/ethnicity not shown separately because of too few cases.

NOTES: Figures in first two columns are rounded to nearest hundred. Percentages add to more than 100 because respondents could select more than one limitation. Percentages are the proportion of total that sought or held a career-path job, which is a job that will help further one's career plans or is in a field in which the respondent wishes to make his or her career.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Survey of Doctorate Recipients.

Appendix table 6-21

Demographic characteristics of scientists and engineers, by highest degree level and sex: 1999

Page 1 of 2

Characteristic	Total, all degree levels[a]			Bachelor's			Master's			Doctorate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Number of scientists and engineers	13,050,800	8,304,100	4,746,700	7,682,100	4,789,600	2,892,500	3,535,900	2,169,900	1,366,000	839,000	630,600	208,400
	Percent											
Age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
29 or younger	13.6	10.6	18.8	19.2	15.3	25.7	6.3	5.1	8.3	1.3	1.0	2.2
30–39	22.6	21.1	25.3	23.8	22.6	25.9	21.0	19.9	22.8	19.0	17.1	24.8
40–49	28.2	27.8	28.9	26.7	27.0	26.3	29.5	27.8	32.3	27.4	25.5	33.2
50 or older	35.6	40.5	27.0	30.2	35.1	22.1	43.1	47.2	36.7	52.3	56.4	39.8
Race/ethnicity												
White, non-Hispanic	83.8	85.3	81.0	84.2	86.4	80.4	82.7	83.1	81.9	80.0	80.2	79.3
Asian/Pacific Islander	7.0	7.2	6.8	6.0	5.7	6.6	8.5	9.6	6.8	13.3	14.0	11.3
Black, non-Hispanic	5.2	3.9	7.4	5.4	4.0	7.6	5.4	4.1	7.7	3.5	2.8	5.5
Hispanic	3.6	3.3	4.3	4.0	3.5	4.9	3.1	2.9	3.4	2.8	2.6	3.5
American Indian/Alaskan Native	0.3	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Marital status												
Married	70.1	74.8	61.8	66.6	70.9	59.5	73.6	79.1	64.9	79.1	83.0	67.1
Widowed	1.4	0.9	2.2	1.4	1.0	2.0	1.6	0.9	2.8	1.2	0.9	1.9
Separated	1.0	0.9	1.3	1.0	0.8	1.3	1.1	0.8	1.5	1.1	1.0	1.4
Divorced	7.5	6.1	9.9	7.2	6.3	8.8	8.1	5.5	12.3	7.9	6.4	12.5
Never married	20.0	17.3	24.7	23.8	21.1	28.3	15.6	13.7	18.5	10.8	8.7	17.1
If married, spouse's employment status												
Employed full time	55.5	42.9	82.3	57.1	43.6	83.5	56.6	44.5	80.0	50.9	42.8	81.0
Employed part time	14.9	19.6	5.0	13.9	18.7	4.5	14.8	19.4	5.8	16.6	19.5	5.6
Not employed	29.5	37.5	12.6	29.0	37.7	11.9	28.6	36.1	14.2	32.5	37.7	13.4
If spouse is employed, whether spouse's job requires technical expertise at the bachelor's or above in:												
Engineering, computer science, or natural sciences	25.5	17.5	37.5	24.5	15.9	38.5	27.0	18.4	39.5	32.2	28.7	47.2
Social sciences	16.0	18.1	12.5	13.8	15.9	10.5	18.0	20.2	14.9	21.7	22.1	20.5
Some other field	35.7	38.2	34.9	32.3	32.7	31.9	37.4	38.0	38.6	37.8	39.4	33.5
Children living at home												
Yes	45.1	45.8	43.9	43.0	43.1	42.9	47.1	48.1	45.5	45.7	46.4	43.4
No	54.9	54.2	56.1	57.0	56.9	57.1	52.9	51.9	54.5	54.3	53.6	56.6

See explanatory information and SOURCE at end of table.

Appendix table 6-21

Demographic characteristics of scientists and engineers, by highest degree level and sex: 1999

Page 2 of 2

Characteristic	Total, all degree levels[a]			Bachelors			Master's			Doctorate		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Percent											
Citizenship												
Native U.S. citizen	88.6	88.0	89.4	90.5	90.6	90.4	86.3	84.7	88.9	75.1	73.7	79.5
Naturalized U.S. citizen	8.0	8.4	[illegible]	7.3	7.3	7.3	9.0	9.9	7.5	13.6	14.5	10.7
Non-U.S. citizen, permanent resident	2.6	2.7	2.3	1.8	1.8	1.9	3.1	3.4	2.5	9.2	9.5	8.1
Non-U.S. citizen, temporary resident	0.8	0.9	0.6	0.4	0.4	0.4	1.6	2.0	1.1	2.1	2.3	1.6

[a] Includes first-professional degrees not shown separately.

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1999. Numbers are rounded to nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-22

Demographic characteristics of scientists and engineers, by race/ethnicity and sex: 1999

Page 1 of 2

Characteristic	Total, all groups			White			Asian/Pacific Islander			Black			Hispanic			American Indian/ Alaskan Native		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Number of scientists and engineers	13,050,800	8,304,100	4,746,700	10,931,000	7,085,700	3,845,300	919,900	597,100	322,800	677,500	324,200	353,300	476,100	270,000	206,100	42,000	24,400	17,600
	Percent																	
Age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
29 or younger	13.6	10.6	18.8	12.5	9.7	17.6	19.9	17.1	25.0	16.1	13.0	19.1	22.9	17.3	30.2	22.4	18.7	27.5
30–39	22.6	21.1	25.3	21.9	20.3	24.9	27.9	27.6	28.6	22.2	20.6	23.7	28.6	27.8	29.7	21.0	20.2	22.3
40–49	28.2	27.8	28.9	28.4	28.0	29.3	25.8	25.5	26.3	29.2	28.7	29.6	27.0	28.0	25.7	24.9	22.4	28.3
50 or older	35.6	40.5	27.0	37.2	42.0	28.3	26.4	29.8	20.0	32.4	37.7	27.6	21.4	26.8	14.4	31.7	38.8	21.9
Marital status																		
Married	70.1	74.8	61.8	71.7	75.7	64.2	69.5	73.0	63.2	51.8	64.1	40.6	61.2	67.9	52.5	61.8	65.3	57.0
Widowed	1.4	0.9	2.2	1.4	1.0	2.1	0.8	0.6	1.2	2.9	1.1	4.5	0.8	0.4	1.3	1.2	S	2.1
Separated	1.0	0.9	1.3	0.9	0.8	1.2	0.6	0.5	0.7	3.1	2.4	3.7	1.5	1.4	1.7	1.0	S	S
Divorced	7.5	6.1	9.9	7.5	6.2	10.0	3.2	2.6	4.2	12.2	8.9	15.2	7.1	5.6	9.0	13.7	12.0	16.0
Never married	20.0	17.3	24.7	18.5	16.3	22.6	25.9	23.4	30.6	30.0	23.5	36.0	29.3	24.7	35.4	22.3	21.8	23.1
If married, spouse's employment status																		
Employed full time	55.5	42.9	82.3	54.1	41.2	82.0	61.7	50.2	86.2	70.5	64.2	79.6	62.9	49.6	85.5	57.2	45.5	75.9
Employed part time	14.9	19.6	5.0	15.7	20.6	5.1	10.8	13.9	4.1	7.8	9.9	4.8	12.0	15.6	6.0	13.8	18.4	6.5
Not employed	29.5	37.5	12.6	30.2	38.2	12.9	27.6	36.0	9.6	21.7	25.9	15.6	25.1	34.9	8.5	29.0	36.1	17.6
If spouse is employed, whether spouses's job requires technical expertise at the bachelor's or above in:																		
Engineering, computer science, or natural sciences	25.5	17.5	37.5	23.7	15.8	35.9	46.1	34.3	63.9	24.6	21.6	28.3	27.6	20.5	38.2	19.1	15.4	23.7
Social sciences	16.0	18.1	12.9	16.1	18.1	13.0	11.6	12.4	10.4	21.1	27.7	12.8	17.3	20.0	14.1	15.1	13.5	17.1
Some other field	35.7	36.2	34.9	36.1	36.2	35.8	32.4	35.7	27.5	34.2	36.2	31.6	35.4	37.0	33.4	43.0	45.3	40.1

See explanatory information and SOURCE at end of table.

Appendix table 6-22

Demographic characteristics of scientists and engineers, by race/ethnicity and sex: 1999

Page 2 of 2

Characteristic	Total, all groups			White			Asian/Pacific Islander			Black			Hispanic			American Indian/ Alaskan Native		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
	Percent																	
Children living at home																		
Yes	45.1	45.8	43.9	44.5	45.1	43.4	49.7	52.1	45.3	46.9	45.9	47.8	46.8	49.5	43.4	44.5	41.3	49.1
No	54.9	54.2	56.1	55.5	54.9	56.6	50.3	47.9	54.7	53.1	54.1	52.2	53.2	50.5	56.6	55.5	58.7	50.9
Citizenship																		
Native U.S. citizen	88.6	88.0	89.6	94.9	94.6	95.4	23.5	20.7	28.6	89.7	86.5	92.6	68.0	65.5	71.2	94.6	94.3	95.1
Naturalized U.S. citizen	8.0	8.4	7.5	3.7	3.9	3.3	52.0	52.7	50.7	6.6	8.4	5.0	24.8	26.9	21.9	4.7	4.5	4.9
Non-U.S. citizen, permanent resident	2.6	2.7	2.3	1.2	1.2	1.1	17.4	18.4	15.5	3.0	4.1	2.1	5.9	6.0	5.7	S	S	S
Non-U.S. citizen, temporary resident	0.8	0.9	0.6	0.2	0.2	0.2	7.2	8.3	5.2	0.7	1.0	0.4	1.4	1.6	1.1	S	S	S

S data with weighted values less than 50 or fewer than 5 respondents are suppressed for reasons of respondent confidentiality and/or data reliability

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Numbers are rounded to nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

Appendix table 6-23

Demographic characteristics of scientists and engineers, by disability status and sex: 1999

Characteristic	Total			Without disabilities			With disabilities		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Number of scientists and engineers	13,050,800	8,304,100	4,746,700	11,943,400	7,541,300	4,402,200	1,107,300	762,800	344,600
	Percent								
Age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
29 or younger	13.6	10.6	18.8	14.5	11.5	19.8	3.4	2.2	6.0
30–39	22.6	21.1	25.3	23.9	22.5	26.4	8.1	7.0	10.6
40–49	28.2	27.8	28.9	28.6	28.3	29.0	24.6	22.8	28.6
50 or older	35.6	40.5	27.0	33.0	37.7	24.8	63.9	68.1	54.7
Race/ethnicity									
White, non-Hispanic	83.8	85.3	81.0	83.7	85.1	81.2	84.8	87.4	79.1
Asian/Pacific Islander	7.0	7.2	6.8	7.2	7.3	6.8	5.9	5.8	6.3
Black, non-Hispanic	5.2	3.9	7.4	5.2	4.0	7.3	5.2	3.2	9.7
Hispanic	3.6	3.3	4.3	3.7	3.3	4.3	3.6	3.2	4.4
American Indian/Alaskan Native	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.6
Marital status									
Married	70.1	74.8	61.8	70.0	74.5	62.2	71.4	78.0	56.8
Widowed	1.4	0.9	2.2	1.2	0.8	2.0	3.2	2.4	5.0
Separated	1.0	0.9	1.3	1.0	0.8	1.3	1.4	1.1	2.0
Divorced	7.5	6.1	9.9	7.1	5.9	9.3	11.2	8.3	17.5
Never married	20.0	17.3	24.7	20.7	18.1	25.2	12.8	10.2	18.7
If married, spouse's employment status									
Employed full time	55.5	42.9	82.3	56.3	43.2	83.2	47.3	40.0	69.4
Employed part time	14.9	19.6	5.0	15.1	20.0	5.0	13.4	15.8	6.0
Not employed	29.5	37.5	12.6	28.6	36.8	11.8	39.3	44.2	24.5
If spouse is employed, whether spouse's job requires technical expertise at the bachelor's or above in:									
Engineering, computer science, or natural sciences	25.5	17.5	37.5	25.8	17.8	37.7	21.0	14.6	35.3
Social sciences	16.0	18.1	12.9	16.0	18.2	12.8	16.9	17.7	15.1
Some other field	35.7	36.2	34.9	35.8	36.4	35.0	34.5	34.7	33.9
Children living at home									
Yes	45.1	45.8	43.9	45.7	46.5	44.4	38.3	38.7	37.4
No	54.9	54.2	56.1	54.3	53.5	55.6	61.7	61.3	62.6
Citizenship									
Native U.S. citizen	88.6	88.0	89.6	88.5	87.8	89.6	89.8	89.8	89.7
Naturalized U.S. citizen	8.0	8.4	7.5	8.0	8.4	7.4	8.0	8.2	7.6
Non-U.S. citizen, permanent resident	2.6	2.7	2.3	2.7	2.8	2.3	1.7	1.4	2.4
Non-U.S. citizen, temporary resident	0.8	0.9	0.6	0.8	0.9	0.6	0.5	0.5	0.3

NOTES: "Scientists and engineers" include all people holding a bachelor's degree or higher in an S&E field plus people holding a non-S&E bachelor's degree or higher who were employed in an S&E occupation in 1993. Numbers are rounded to nearest hundred. Details may not add to totals because of rounding.

SOURCE: National Science Foundation, Division of Science Resources Statistics, Scientists and Engineers Statistical Data System (SESTAT).

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